



TECHILA® WORKER DEPLOYMENT GUIDE FOR GOOGLE COMPUTE ENGINE

END-USER DOCUMENT

17 OCTOBER 2016

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1. Introduction

This guide is designed for persons who are planning to deploy Techila Workers in Google Compute Engine using the Techila Starter Tool for Google Compute Engine. For the remainder of this document "Techila Starter Tool for Google Compute Engine" will be referred to as "Techila Starter Tool".

If you do not have access to an existing Techila Server, instructions for deploying a Techila Server in Google Compute Engine (GCE) can be found in the document "Techila Distributed Computing Engine Set-Up Guide for Google Compute Engine". Instructions on setting up an on-premise Techila Virtual Server can be found in the document "Techila Virtual Server Installation Guide VMware".

If you are unfamiliar with the Techila terminology used in this document, please refer to the document "Introduction to Techila Distributed Computing Engine".

These documents are available in the Techila Extranet.

Screenshots and dialogs in this document are from Microsoft Windows 7. Depending on your system, the appearance of screenshots might be different.

The structure of this document is as follows:

Chapter 2 contains a list of prerequisites that must be met before proceeding with deploying Techila Workers to an existing Techila Distributed Computing Engine (TDCE) environment.

Chapter 3 contains a list of preparation steps that need to be performed before Techila Workers can be deployed in Google Compute Engine using the Techila Starter Tool. This tool is included in the file 'techila_sdk_gce_plugin.zip', which can be downloaded from the Techila Extranet.

Chapter 4 contains instructions for deploying Techila Workers in Google Compute Engine.

Chapter 5 contains instructions for removing Techila Workers from Google Compute Engine.

Chapter 6 contains instructions for removing all TDCE related Google Compute Engine components that are created when deploying Techila Workers with the Techila Starter Tool.

Chapter 7 contains examples on how to interpret the information displayed in the Techila Web Interface and in the Google Compute Engine console.

2. Requirements

2.1. Techila Server Requirements

In order to deploy Techila Workers in Google Compute Engine, the Techila Server must meet certain version requirements and network requirements.

Information on Techila Server requirements can be found in the document "Techila Distributed Computing Engine Administration Guide" Chapter "Techila Server Requirements – Google Compute Engine".

Please contact your local Techila administrator for more information about your Techila Server configuration.

2.2. Techila Server Configuration

In order to deploy Techila Workers in Google Compute Engine using the Techila Starter Tool, the following configurations need to be performed on the Techila Server:

- Your Techila Web Interface user account must be given permission to deploy Techila Workers in public cloud environments
- An external IP address must be configured for the Techila Server

These configurations require administrative rights. Please contact your local Techila administrator if required.

Instructions for these procedures can be found in the document "Techila Distributed Computing Engine Administration Guide" Chapter "Managing Cloud Settings".

2.3. Techila SDK

The instructions this document assume that you have access to a keystore containing a valid End-User Key and that you have successfully configured the following parameters in your 'techila_settings.ini' configuration file included in the Techila SDK:

- hostname
- keystore
- port

If you have not configured your 'techila_settings.ini' configuration file, please perform the configuration as described in the document "Getting Started Guide for Techila Distributed Computing Engine" before proceeding.

2.4. Ensuring Java Is Available

In order to launch the Techila Starter Tool, Java needs to be installed on the computer you are using. Java Platform, Standard Edition 6 (or newer) Java Development Kit (JDK) or Java Runtime Environment (JRE) are supported.

When Java is installed and available from the command line, Java version can be verified with the following command. Please note that executing the command requires that the Java installation path is listed in the PATH environment variable.

```
java -version
```

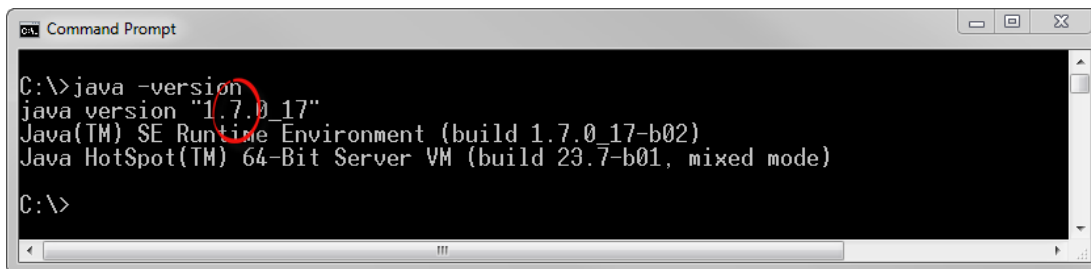


Figure 1. Verifying the Java version from the command line. In this example, Java Standard Edition 7 is available.

3. Preparation

The following Chapters describe how to download and configure the Techila Starter Tool on your computer.

3.1. Adding Techila SDK Plugin Components

The Techila Starter Tool enables you to deploy Techila Workers to Google Compute Engine. Please follow the steps below to add the Techila SDK plugin components to your existing Techila SDK installation.

1. Login to the Techila Extranet located at <http://www.techilatechnologies.com/extranet>

If you do not have access to Techila Extranet, please contact your Account Manager or Techila Support at support@techilatechnologies.com to request for Techila Extranet access.

2. Download the file 'techila_sdk_gce_plugin.zip'. The download link for the file is located in the "End-User downloads" section.

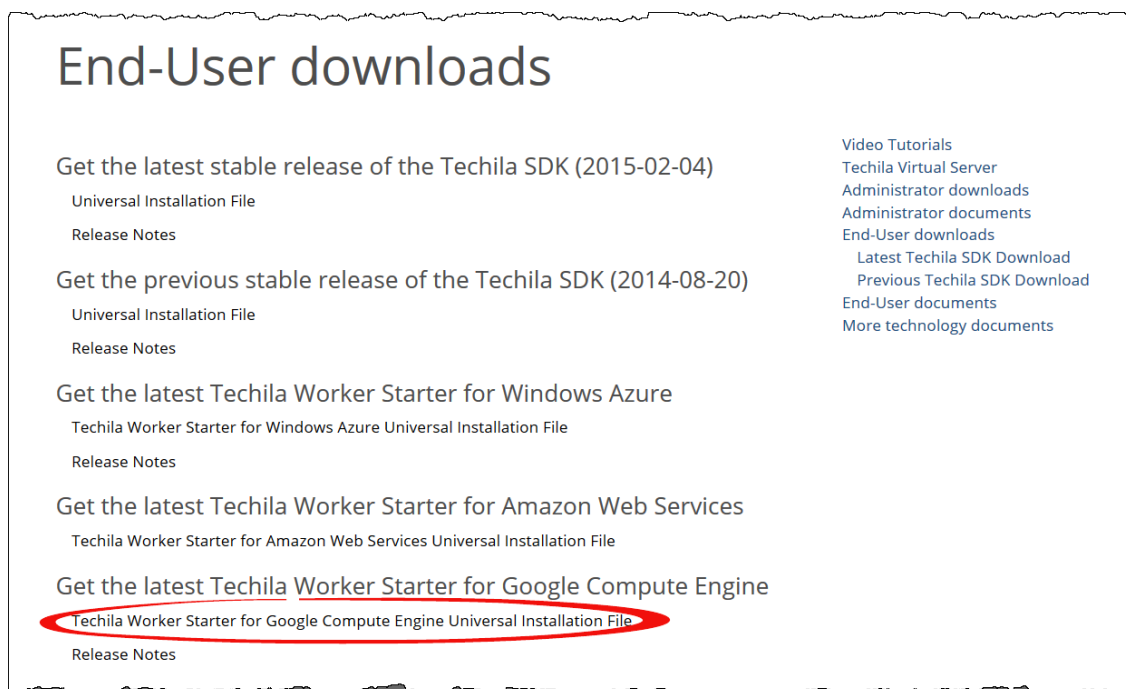


Figure 2. Download the Techila Starter Tool.

3. Locate the ZIP archive 'techila_sdk_gce_plugin.zip' on your computer. In the example below, the file is located in 'C:\Downloads\'.

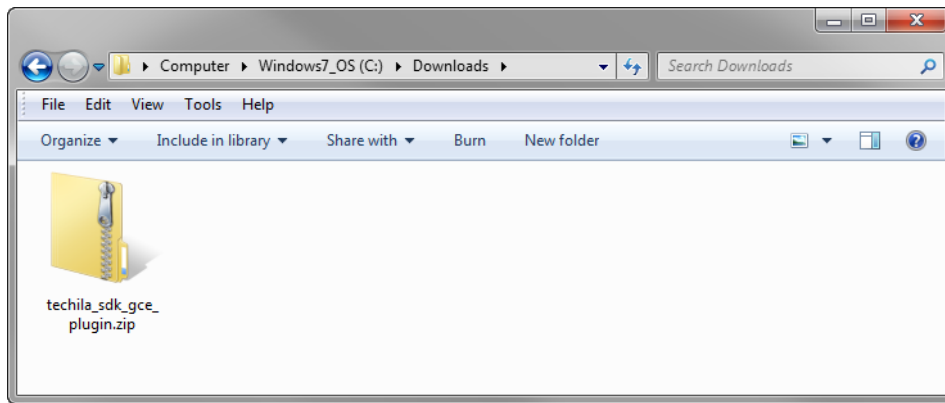


Figure 3. The Techila SDK plugin is delivered in a ZIP file.

4. Extract the Techila SDK GCE plugin over your existing Techila SDK folder. This will extract the plugin components to the 'lib' folder in the Techila SDK.

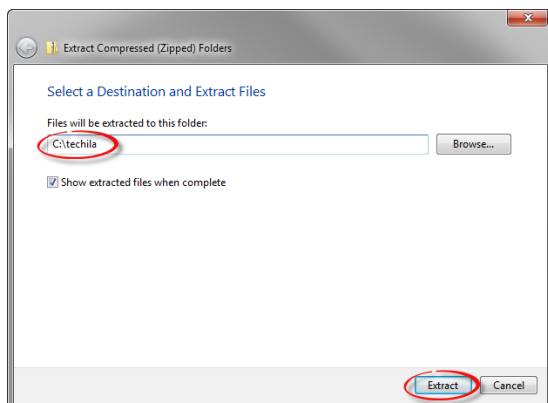


Figure 4. Extract the plugin components over your existing Techila SDK.

5. The extraction process will merge the Techila SDK GCE plugin 'lib' directory with the Techila SDK 'lib' directory. If prompted, confirm the action.

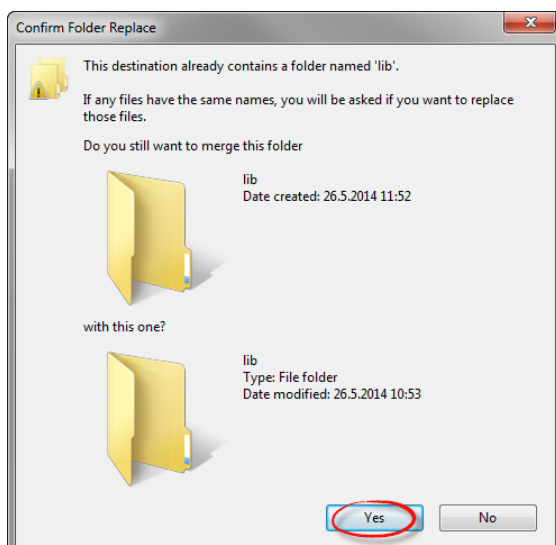


Figure 5. The extraction process will extract additional files to the 'lib' directory of the Techila SDK.

6. After the plugin components have been extracted, the 'lib' folder in the Techila SDK should contain additional files as illustrated below (version numbers might differ).

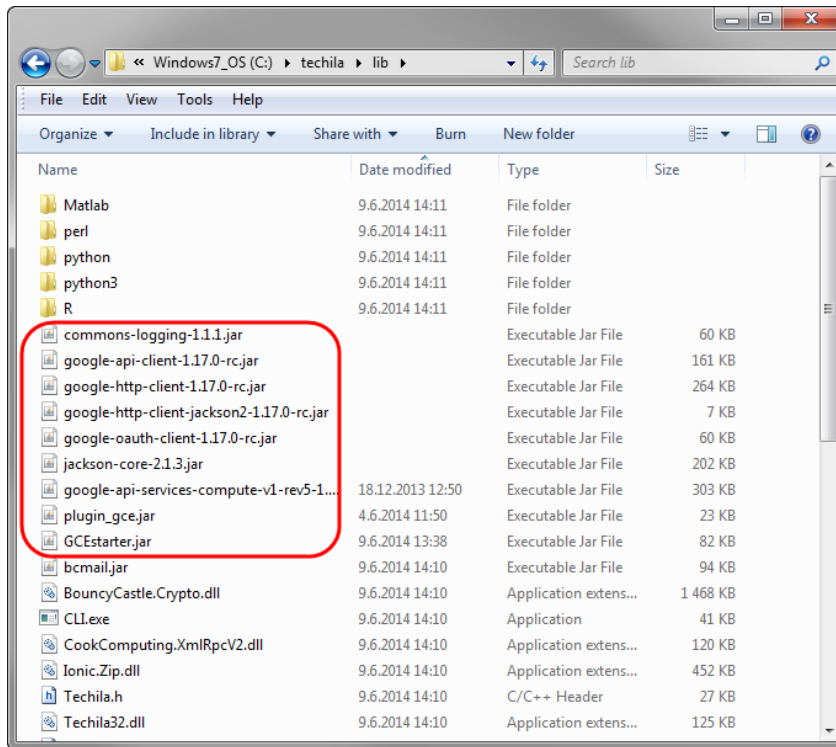


Figure 6. Techila GCE plugin components.

You have now successfully added the files containing the Techila Starter Tool to your Techila SDK. Please follow the instructions in Chapter 3.2 to configure the Techila Starter Tool.

3.2. Configuring the Techila Starter Tool

This Chapter contains instructions for linking GCE security credentials to the Techila Starter Tool.

1. Navigate to the 'techila/lib' directory in the Techila SDK and launch the Techila Starter Tool by double clicking on the 'GCEstarter.jar' file icon.

The application can also be launched from the command line using command:

```
java -jar GCEstarter.jar
```

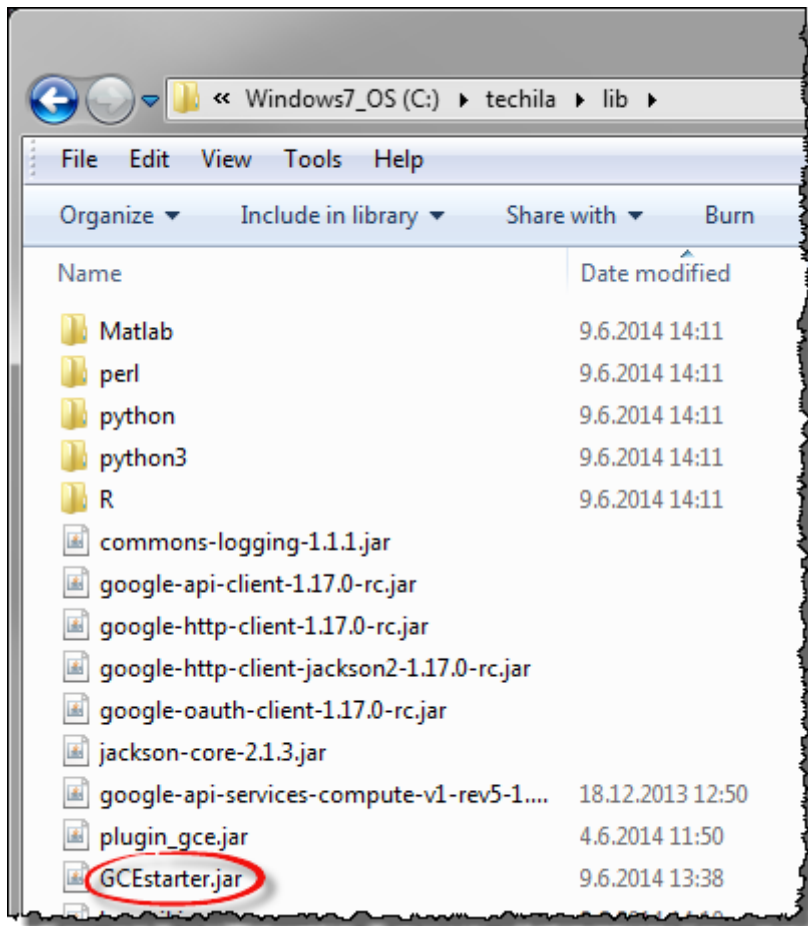


Figure 7. Launch the application by double clicking on the 'GCEstarter.jar' file icon.

2. If prompted, enter your keystore file password to continue.

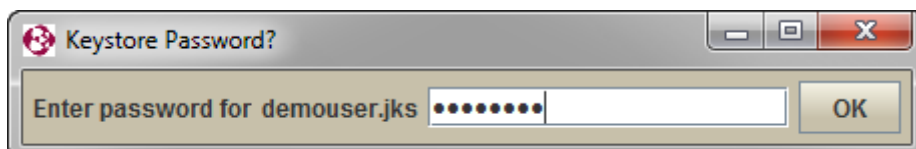


Figure 8. By default, the graphical password dialog will be displayed. The password dialog behaviour can be configured in the 'techila_settings.ini' configuration file.

3. Open the Google Compute Engine Console by clicking **Open Google Compute Engine console** button.

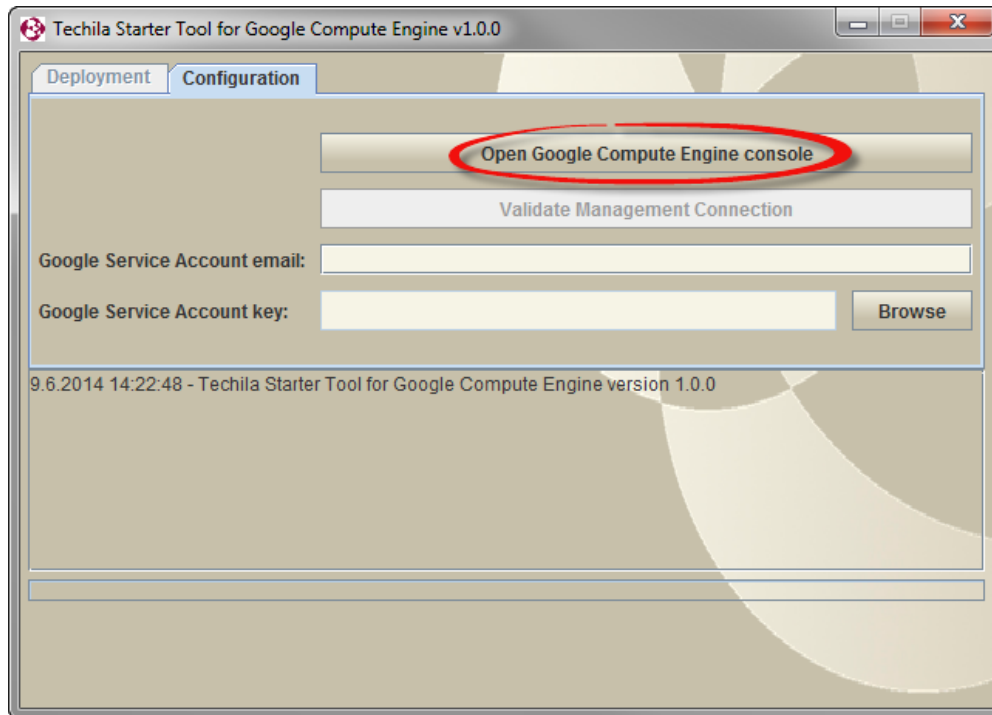


Figure 9.

Clicking the highlighted button will open the Google Compute Engine console in your default web browser.

4. If required, sign in to your Google Account.

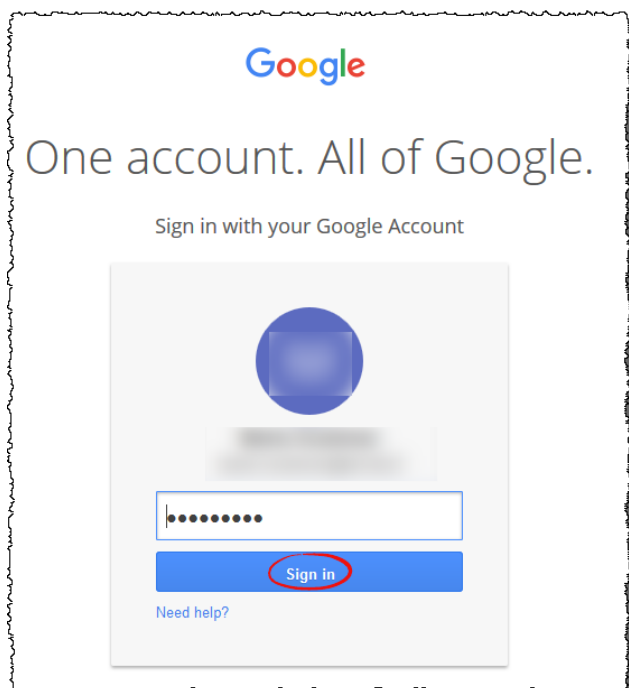


Figure 10. Sign in using your Google login credentials.

5. After signing in, click the **Create Project...** button to create a project.

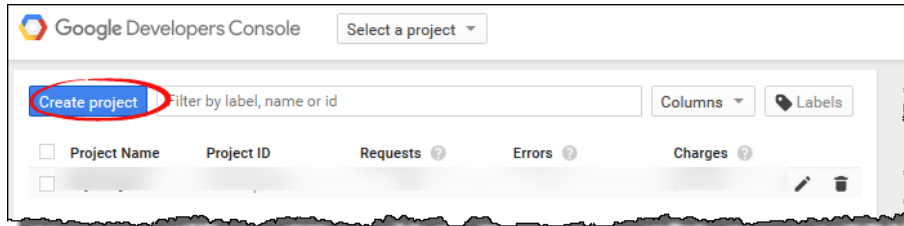


Figure 11. Create a new project.

6. Enter a suitable name for the Project.

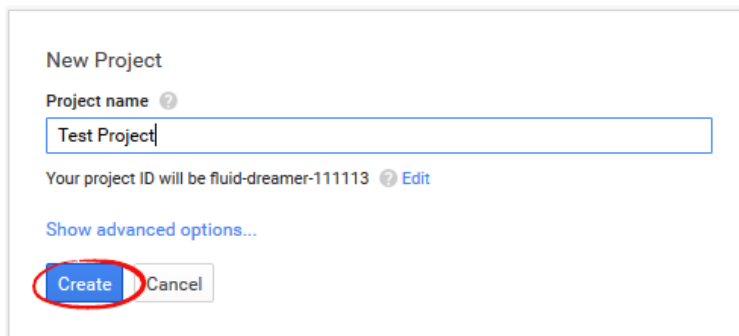


Figure 12. Naming the project.

7. After creating the project, select your project, click **APIs & auth** -> **APIs** -> **Compute Engine API**.

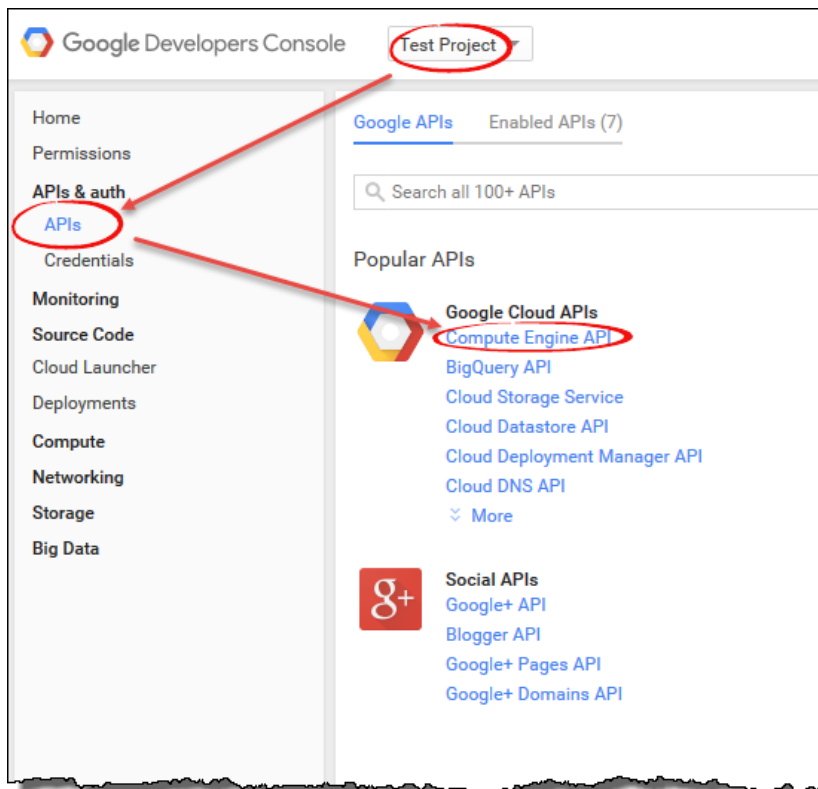


Figure 13. Opening Compute Engine API

8. Click the **Enable API** button to enable the API.

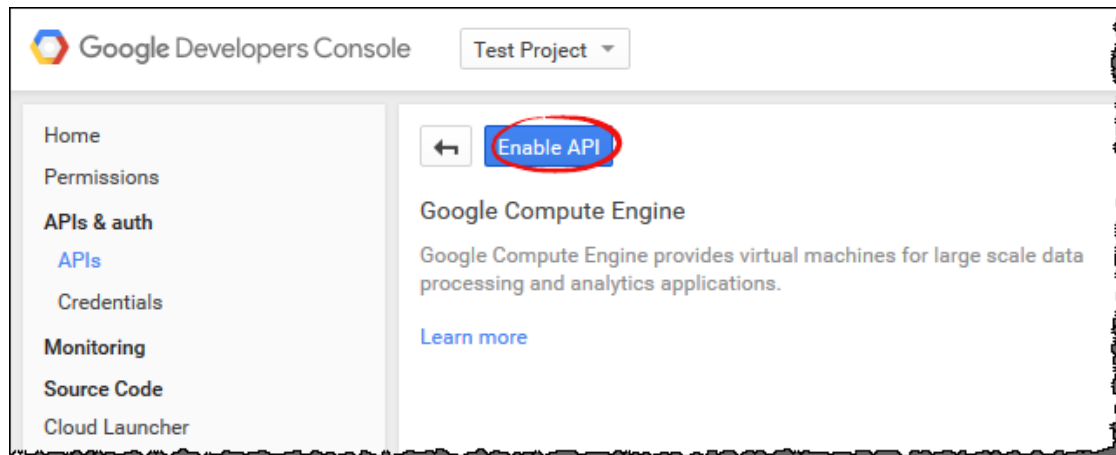


Figure 14. Enable the Google Compute Engine API.

After enabling the API, the view should resemble the one shown below.

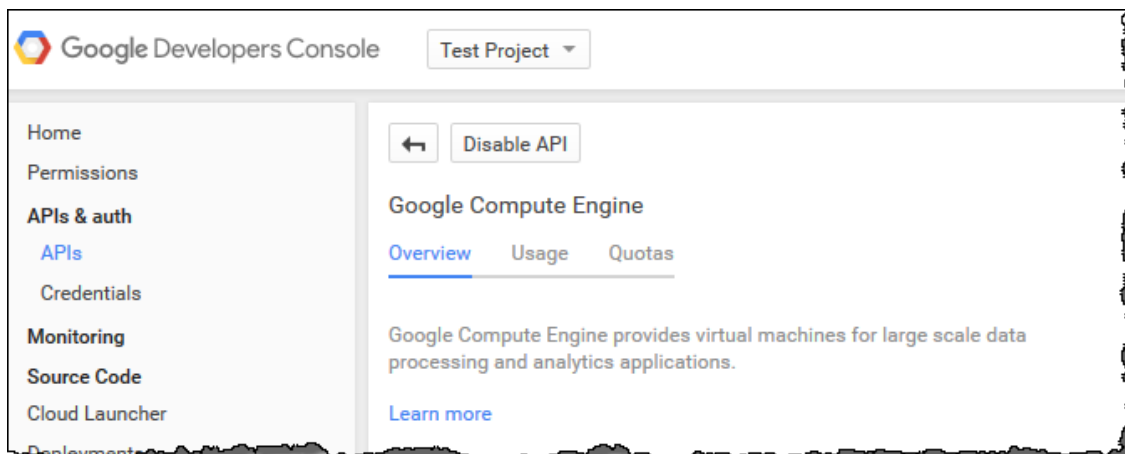


Figure 15. View after enabling the API

Note! This step requires that you have a valid billing method defined for your account. If no billing method has been defined, you will need to add a billing method before continuing.

9. During the following steps, a new service account will be created and the security credentials of the account will be linked with the Techila Deployment Tool. This will enable the Techila Deployment Tool to manage your GCE environment (deploy instances, create data disks, etc.).

Using your web browser, click **APIs & auth** -> **Credentials** and select **Credentials** -> **Add credentials** -> **Service account**.

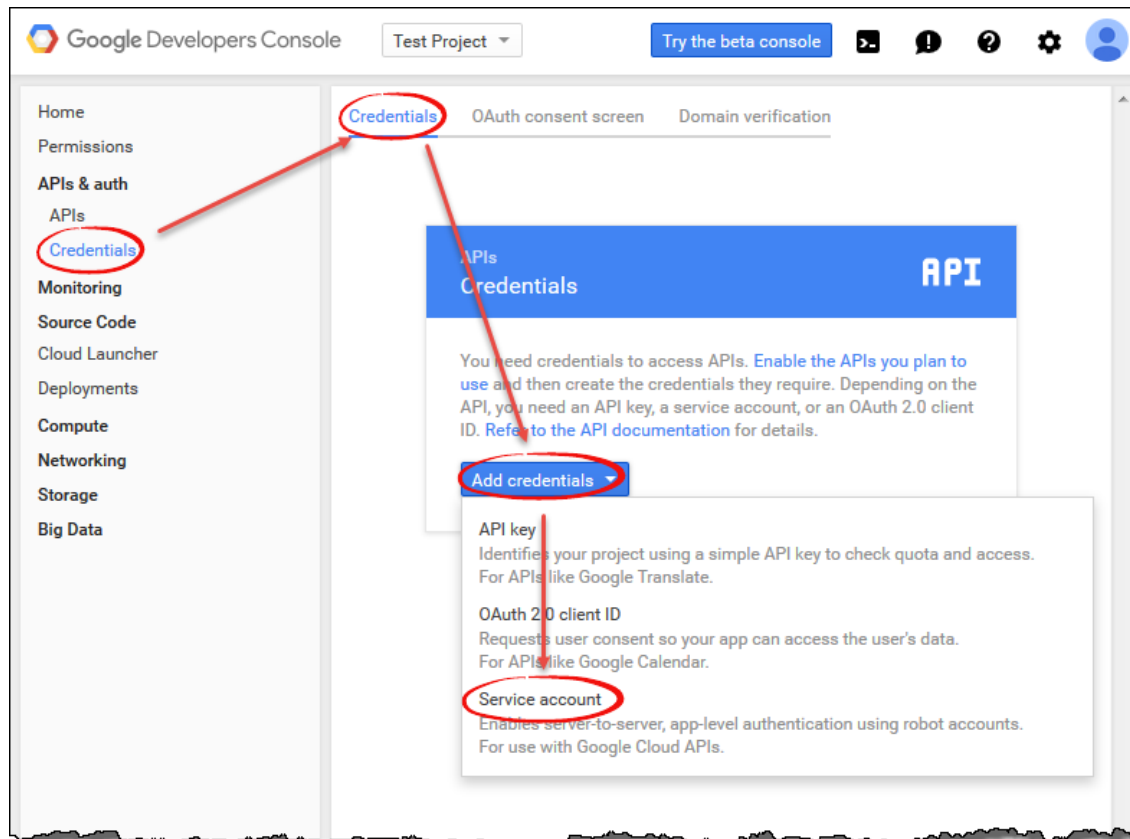


Figure 16. Create a new service account.

10. Choose P12 as the key type and click **Create**.

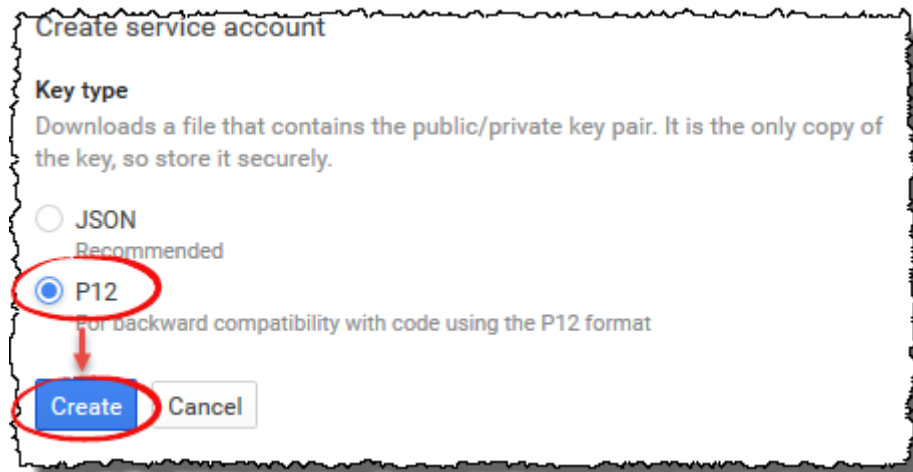


Figure 17. Pop-up containing information about the security credentials.

A file transfer dialog window will also be displayed that can be used to download the file containing the private key to your computer.

Save the file to your computer and make a mental note where you stored the file. Note that this file should be stored in a secure location. This file will be imported to the Techila Deployment Tool during the following steps.

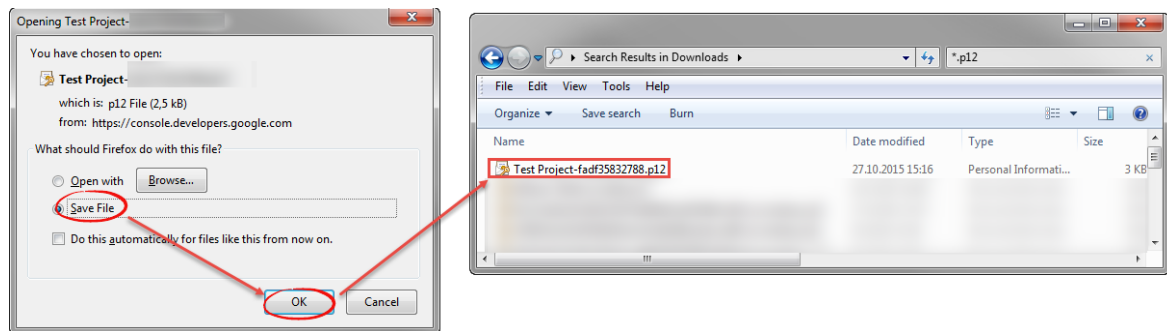


Figure 18. Save the file containing the private key to your computer. In this example, the file has been stored in 'C:\Downloads'.

11. After saving the file on your computer, click the **Close** button in the pop-up window to continue.

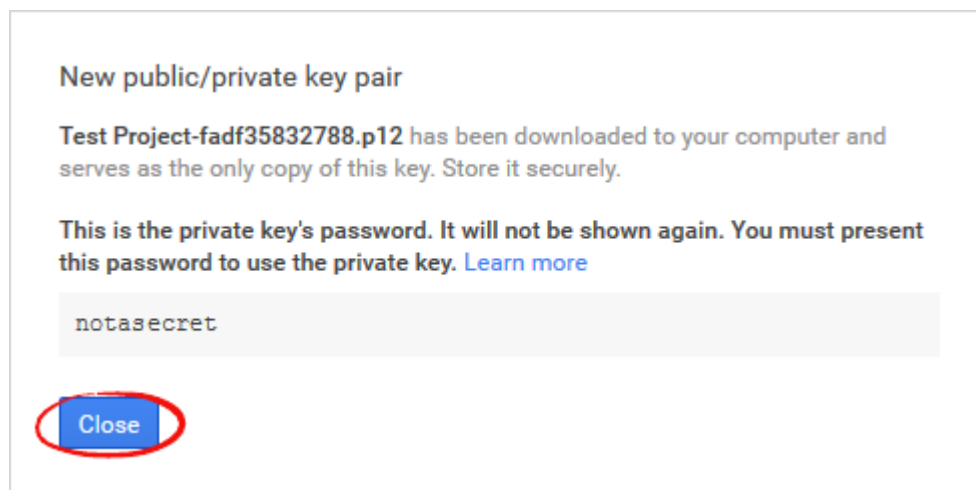


Figure 19. Click the highlighted button to continue.

12. Copy the service account email address to the Techila Deployment Tool in field "Google Service Account email".

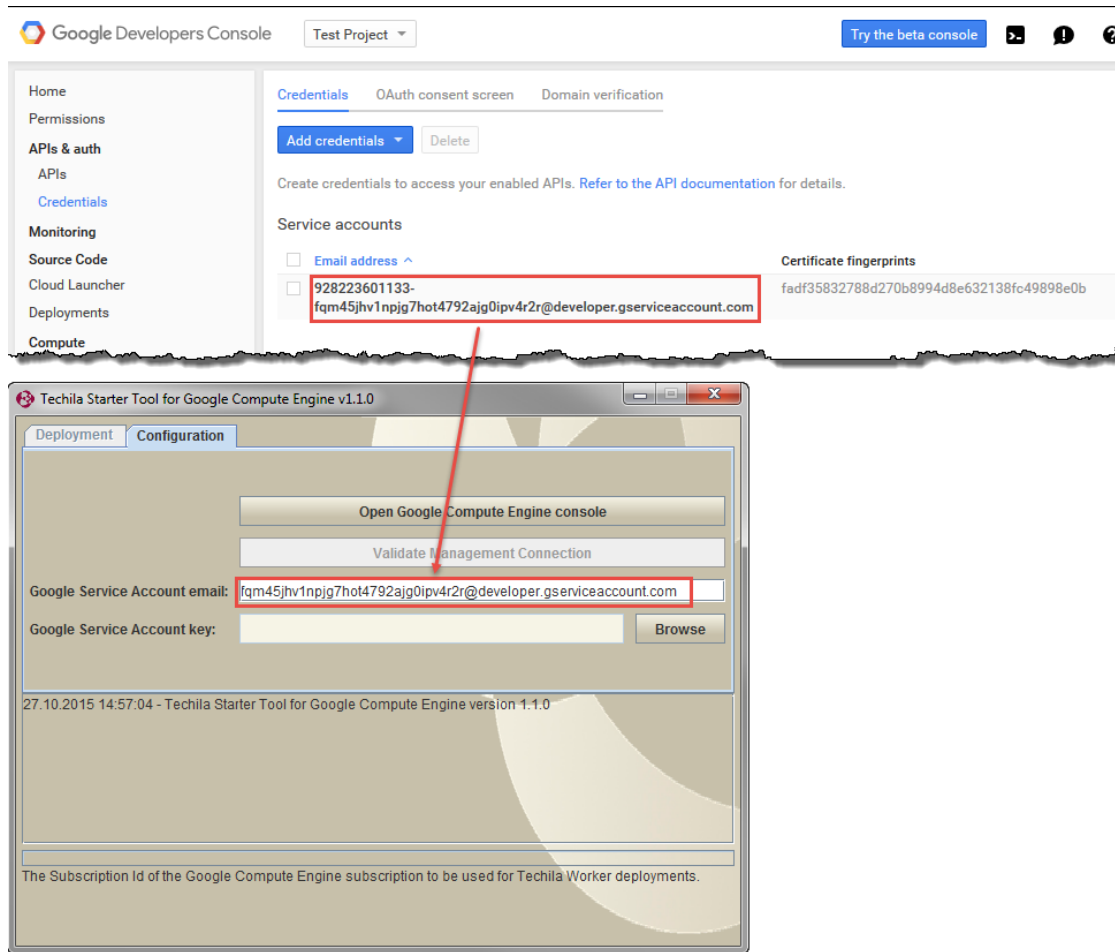


Figure 20. Copy the service account email address to the highlighted field in the Techila Starter Tool.

13. In the Techila Starter Tool, click the **Browse** button. This will open a file dialog window, which will be used to select the file containing the private key that was downloaded in the previous step.

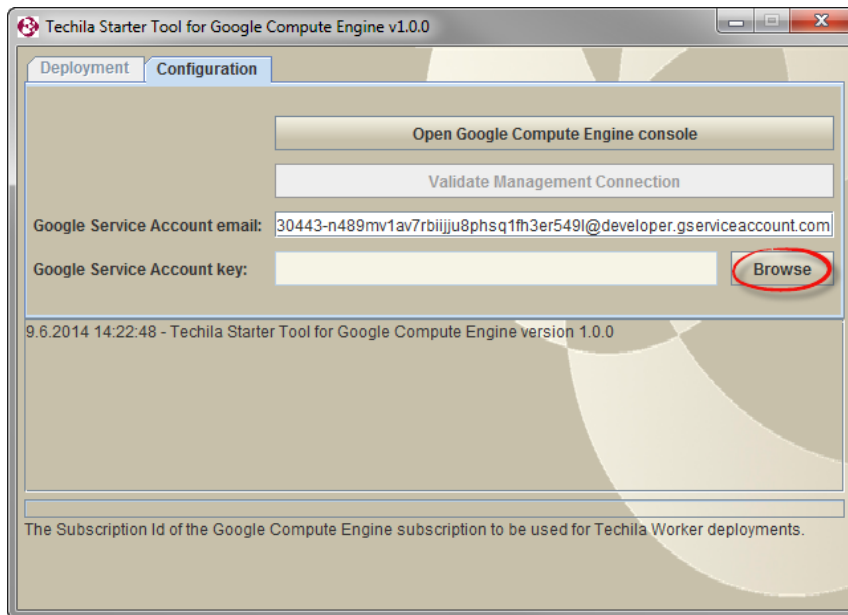


Figure 21. Click the highlighted button to select the file containing the private key.

14. Using the file dialog window, select the file containing the private key (downloaded in step 10). After selecting the file, click the **Open** button to continue.

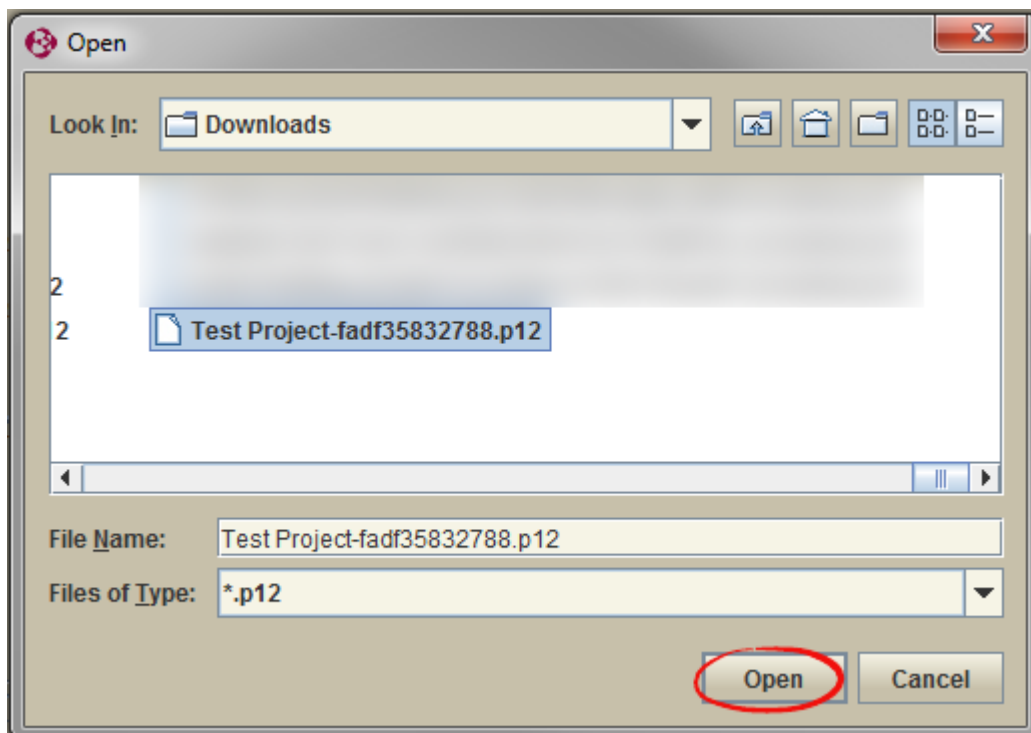


Figure 22. Select the file containing the private key.

15. After selecting the file, the file location should be visible in the "Google Service Account key" field.

Click the **Validate Management Connection** button to perform a connection test.

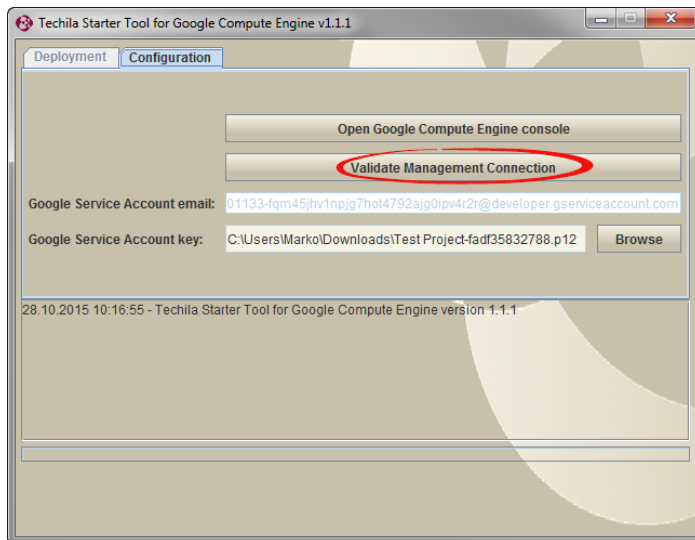


Figure 23. Click the highlighted button to perform a network connection test with the Techila Server.

16. After the network connection test is completed, the message "GCE connection tested successfully" will be displayed in the message area.

The message area will also display the maximum number of cores that can be used for Techila Workers deployments.

The view will also automatically change to the Deployment tab, which can be used to deploy Techila Workers in Google Compute Engine.

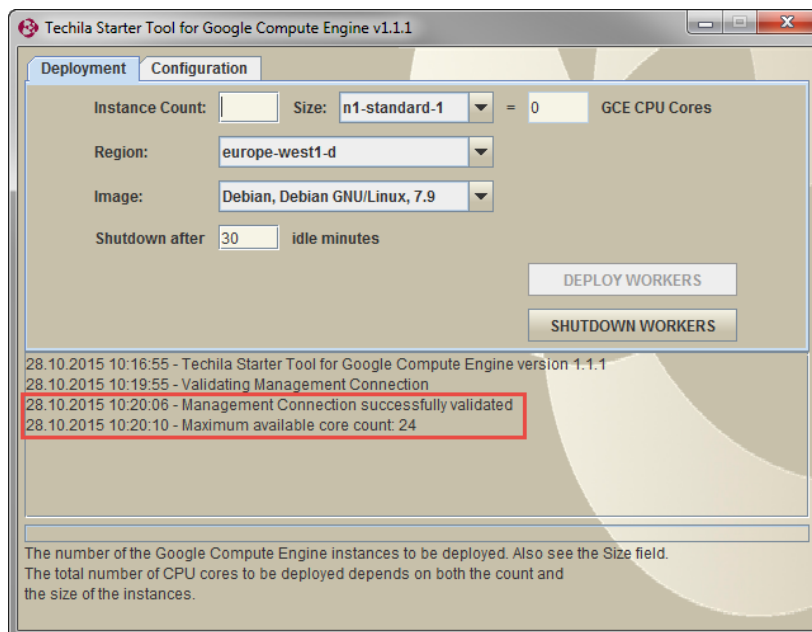


Figure 24. The "Deployment" tab will be automatically displayed after the management connection has been successfully validated.

Congratulations, you have successfully configured the Techila Starter Tool. You can now continue with deploying Techila Workers as described in Chapter 4.

4. Deploying Techila Workers in Google Compute Engine

This Chapter contains information on how to deploy Techila Workers in Google Compute Engine using the Techila Starter Tool. Please note that in order to deploy Techila Workers; the Techila Starter Tool must be properly configured as described in Chapter 3.

Instructions for removing Techila Workers can be found in Chapter 5.

1. If required, launch the Techila Starter Tool by double clicking on the 'GCEstarter.jar' file icon. If the Techila Starter Tool is already launched, continue from step 3.

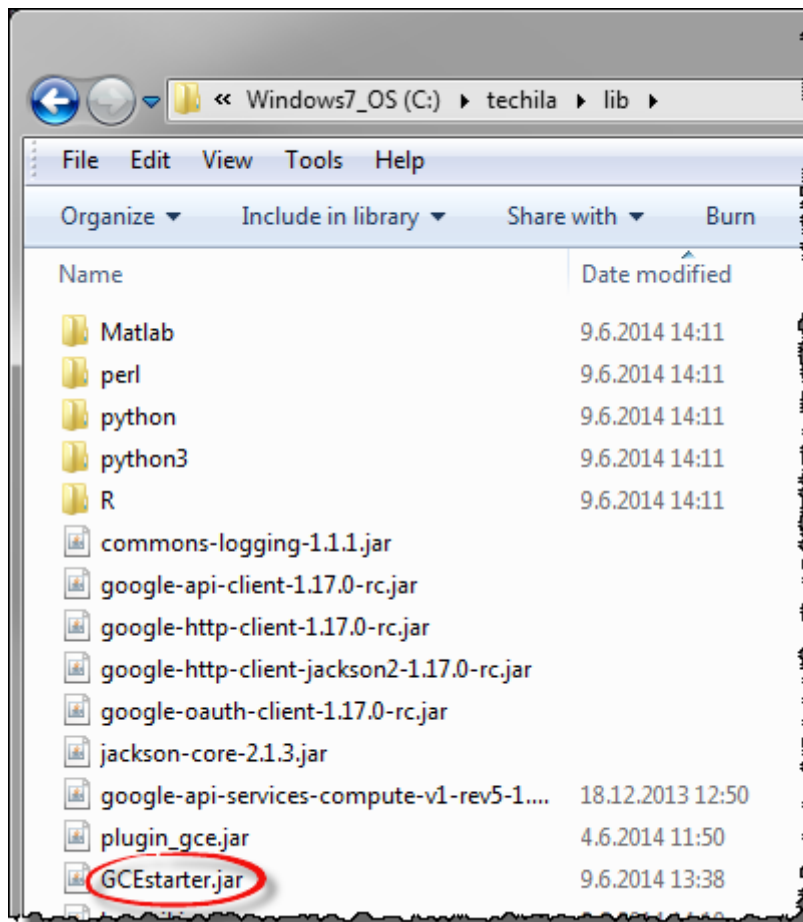


Figure 25. Launch the application by double clicking on the highlighted file icon.

2. If required, enter your keystore password.
3. After entering your password, the management connection will be automatically validated. After the connection has been successfully validated, the view will automatically change to the "Deployment" tab, which can be used to deploy Techila Workers in Google Compute Engine.

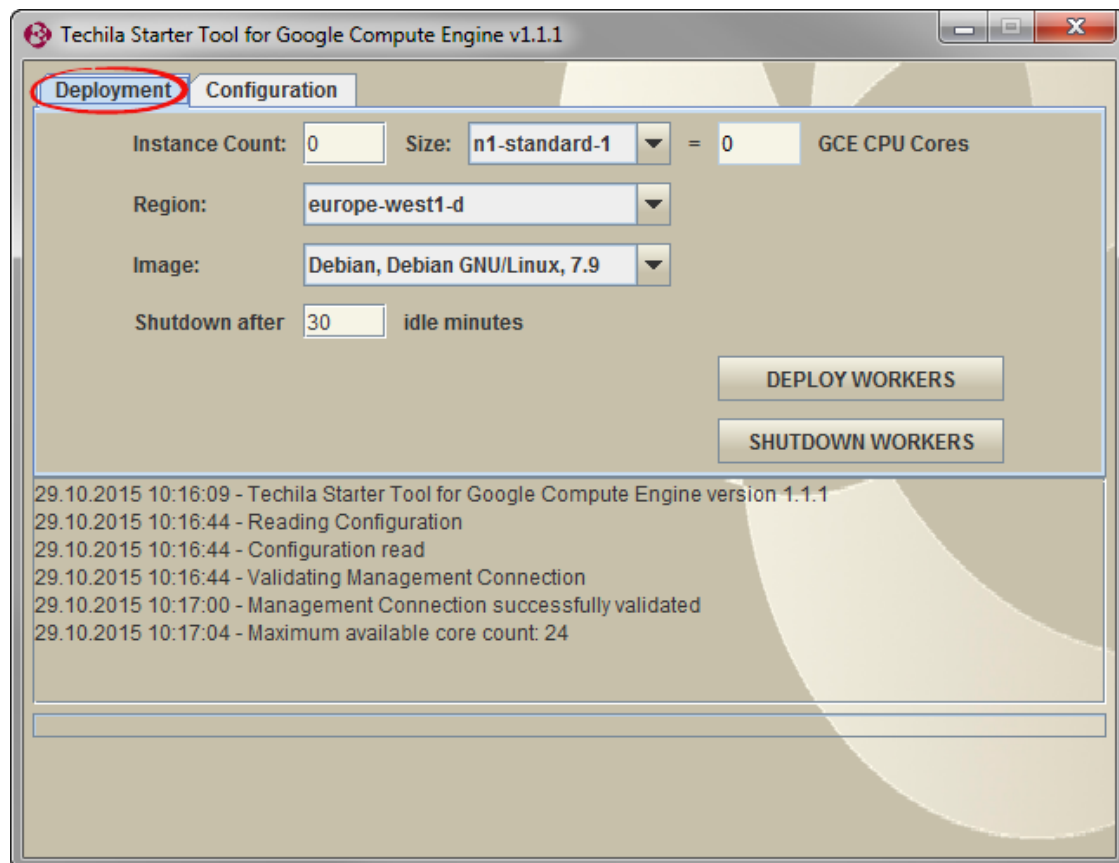


Figure 26. The "Deployment" tab will be automatically displayed after the management connection has been successfully validated.

When deploying Techila Workers, you will need to specify the following settings:

- Instance type of the Techila Workers (dropdown menu "Size")
- Instance count for the deployment (field "Instance Count")
- Instance shutdown delay (field "Shutdown after")
- Deployment region for the Google Compute Engine components (dropdown menu "Region")
- Operating system of the Techila Workers

These settings are explained below:

TECHILA WORKER INSTANCE TYPE

The "Size" dropdown menu can be used to select the Google Compute Engine machine type that will be used when deploying Techila Workers. The maximum number of instances you can deploy will be determined by your Google Compute Engine project quota.

When selecting the Techila Worker Size, it is recommended that you choose the machine type that best suits the distributed application(s) you plan on computing on the Techila Workers. Most important properties include the amount of memory, amount of available disk space and the instance price per hour. Information on these properties can be found on the following webpage:

<https://developers.google.com/compute/pricing>

In the example screenshot below, the instance "Size" has been set to 'n1-standard-4'. With 24 cores available, this means that the maximum number of instances that can be deployed is six (6).

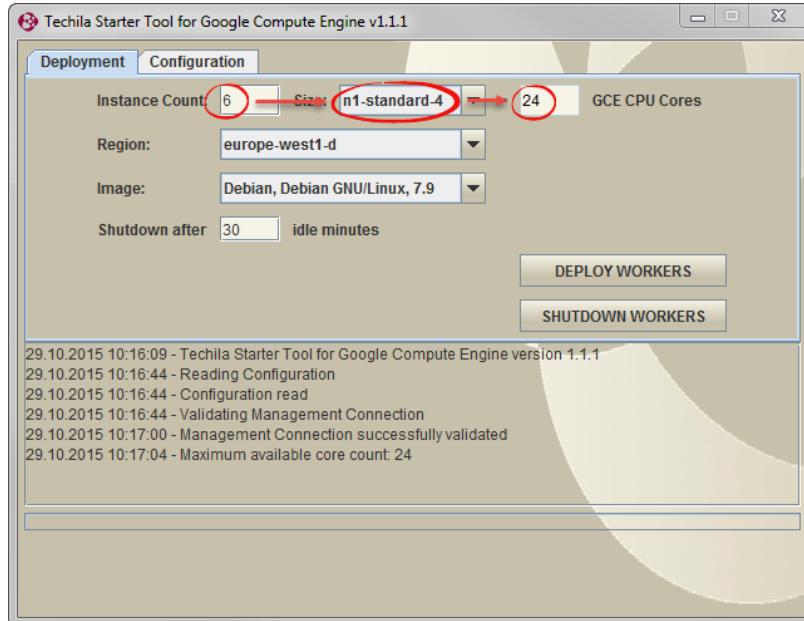


Figure 27. Selections made using the "Size" dropdown menu affect the maximum number of Techila Workers that can be deployed.

If you try to exceed the CPU core quota of your GCE project, the value shown in the "GCE CPU Cores" field will be highlighted in red and the "Deploy Workers" button will be disabled.

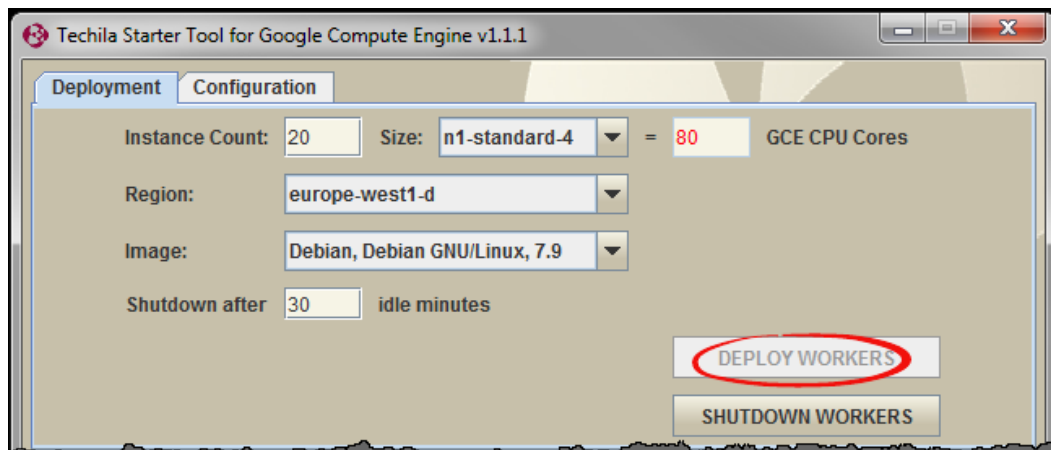


Figure 28. If the core count exceeds your project CPU core quota, the Deploy Workers button will be disabled.

Note! The "Size", "Region" and "Image" drop-down menus will only be available if the environment does not already contain Techila Workers that you have been deployed using the Techila Starter Tool.

After you have deployed Techila Workers, all additional Techila Workers will be automatically deployed on the same machine type and operating system you selected during the initial deployment. In the example below, there are existing Workers deployed on "n1-standard-1"

instances. As a result of this, all subsequent Techila Workers will also be deployed on "n1-standard-1" instances.

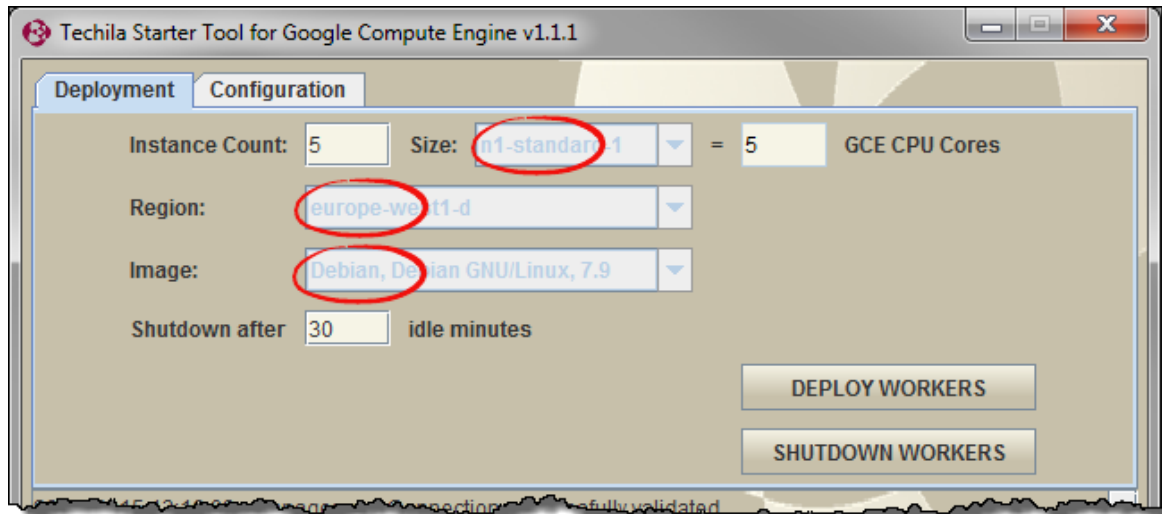


Figure 29. After Techila Workers have been deployed, the drop-down menus will be disabled. Additional Techila Workers will automatically be deployed on the same instance size that was specified when deploying the first Techila Workers.

Note! After you shutdown all currently deployed Techila Workers, the dropdown menus will become available and you can select a new instance type and/or operating system for the Techila Worker deployment.

INSTANCE COUNT

The "Instance Count" field can be used to specify the number of deployed Techila Workers. In the example below, the Techila Worker deployment count is set 10 and "Size" has been set to "n1-standard-1". These settings could be used to deploy 10 Techila Workers on "n1-standard-1" instances.

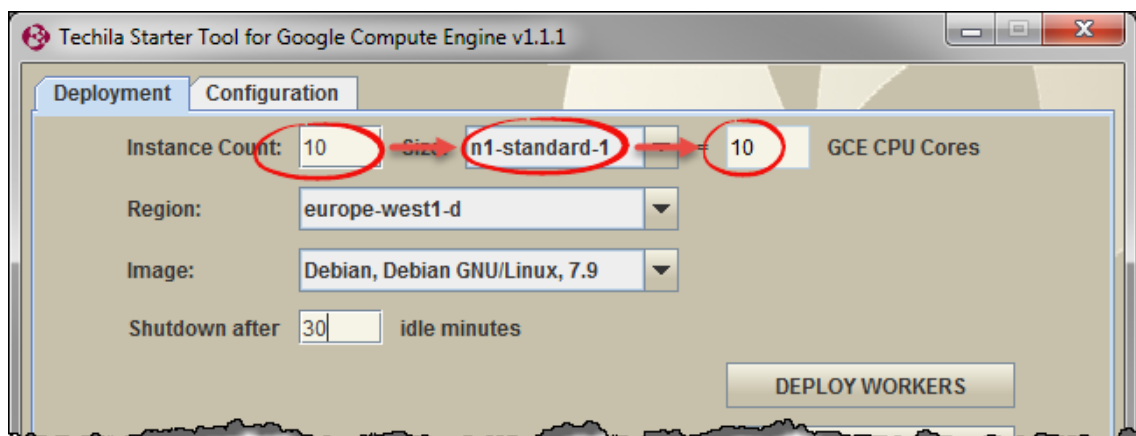


Figure 30. The value defined in the "Instance Count" field is used to control the number of Google Compute Engine instances that should be deployed as Techila Workers.

If Techila Workers have already been deployed, specifying a new value can be used to modify the number of deployed Techila Workers. In the example below, the "Instance Count" field contains the value 15. This setting could be used to set the number of deployed Techila Workers to 15. The Techila Workers will be deployed on the same instance type as the existing Techila Workers (type "n1-standard-1" in this example).

If the new deployment count is larger than the earlier value, additional Techila Workers will be deployed. If the new deployment count is smaller than the original value, instances will be shutdown so that the number of deployed instances matches the value you specified.

Changes to the Techila Worker count will be applied when the "Deploy Workers" button is clicked.

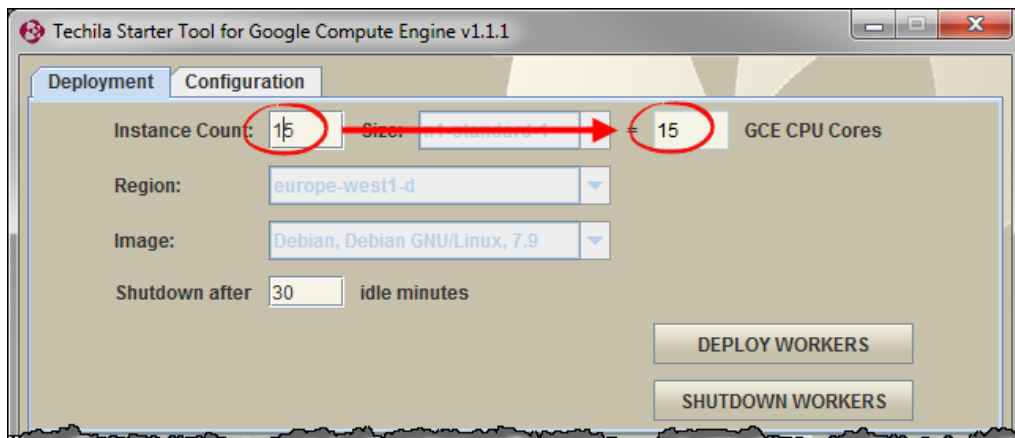


Figure 31. The Techila Worker deployment count can be modified by specifying the desired number of instances in the "Instance Count" field. Also note that the "Size" field will be greyed out because Techila Workers have already been deployed.

Note! If you are deploying Techila Workers with a Microsoft Windows operating system, one additional instance will also be deployed. This additional instance will be deployed using a 'n1-standard-1' instance and is required for routing the network traffic between the Techila Server and Techila Workers. This additional 'n1-standard-1' instance will increase the CPU core requirement of the deployment by one CPU core, meaning it will affect the number of Techila Worker instances deployed if the CPU core quota is exceeded.

For example, if your CPU core quota is 20 and you attempt to deploy 10 'n1-standard-2' Windows Techila Workers (20 cores), the number of deployed Techila Worker instances will be automatically reduced by one to accommodate the CPU core requirement of the networking instance. The final deployment would consist of nine 'n1-standard-2' Techila Worker instances and one 'n1-standard-1' networking instance.

INSTANCE SHUTDOWN DELAY

The "Shutdown after" field can be used to specify a shutdown delay for the Techila Workers. Specifying a shutdown delay will automatically shutdown the instances hosting the Techila Workers if they remain idle for the specified time. It is however strongly recommended that the deletion of instances is always verified using the Google Compute Engine console.

The shutdown delay will be activated when computational Jobs are detected on the Techila Workers. Computational activity is polled at five second intervals, meaning extremely short test Projects might not trigger the shutdown delay. Please note that this also means that if the Techila Workers have only been deployed, but no Projects have been computed, the instances will not be automatically shutdown.

The shutdown delay will be automatically reset when a computational Job is detected on any of the Techila Workers. It is also possible to modify the shutdown delay of existing Techila Worker deployments by entering a new value to the field and clicking the "Deploy Workers" button.

In the example below, the shutdown delay has been set to 30 minutes and the Techila Worker deployment count to 10. This means that if no computational Jobs are detected on any of the Techila Workers within a 30 minute time window, all 10 instances will be shutdown.

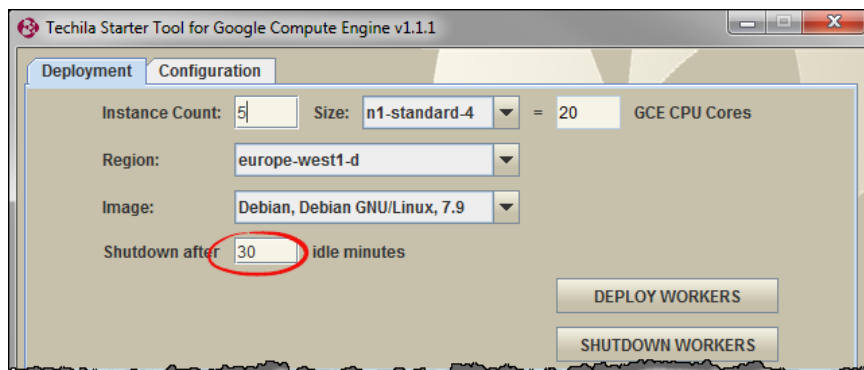


Figure 32. Specifying that Techila Workers should be shut down after 30 idle minutes.

Automatic shutdown can be disabled by entering the value 0 to the "Shutdown after" field. This is illustrated below in Figure 33.

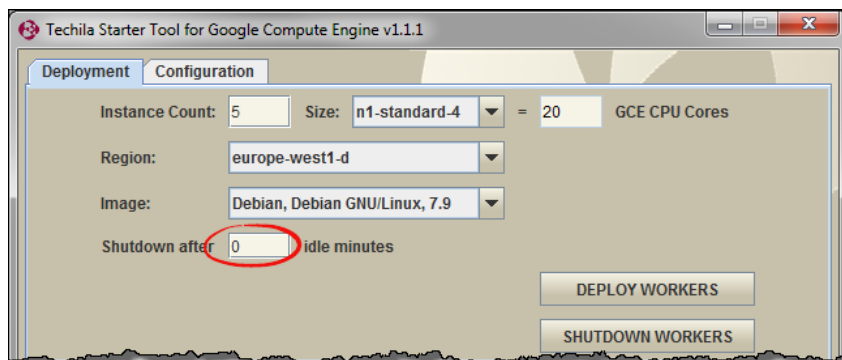


Figure 33. Specifying that Techila Workers should not be automatically shutdown

DEPLOYMENT REGION FOR THE GOOGLE COMPUTE ENGINE COMPONENTS

The "Region" dropdown menu can be used to specify the location of the Google Compute Engine components that will be automatically generated during the Techila Worker deployment process.

The "Region" dropdown menu will only be available when there are no currently deployed Techila Workers. When choosing the region, it is good practice to choose a location that is near to the location of your Techila Server.

If you wish to change the deployment region of your Techila Workers, you will need to shut down all Techila Workers that are currently deployed and restart the tool.

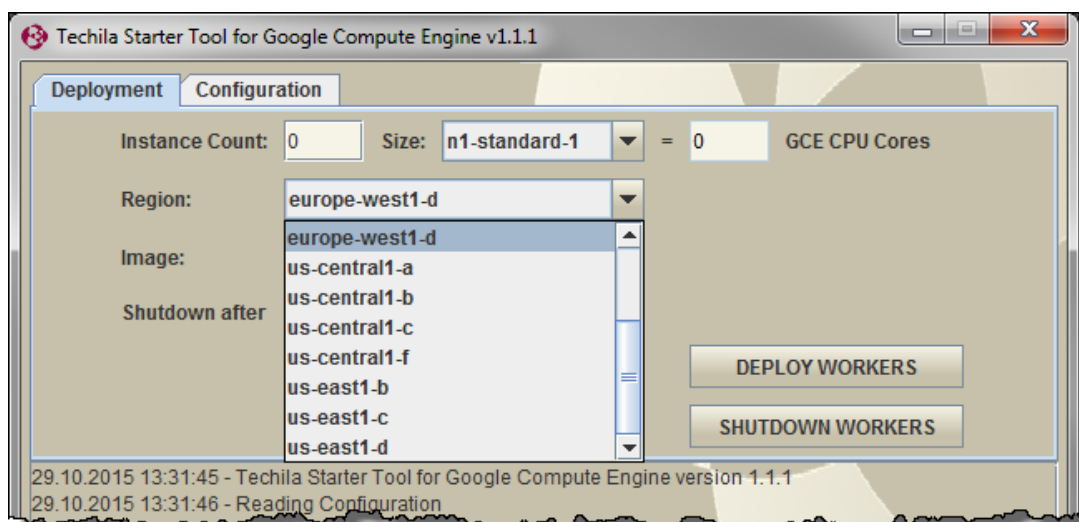


Figure 34. The geographical location of the Techila related Google Compute Engine components can be specified using the dropdown menu.

OPERATING SYSTEM OF THE TECHILA WORKERS

The "Image" dropdown menu can be used to select the operating system of the Techila Workers that will be deployed.

The dropdown menu is illustrated in the screenshot below.

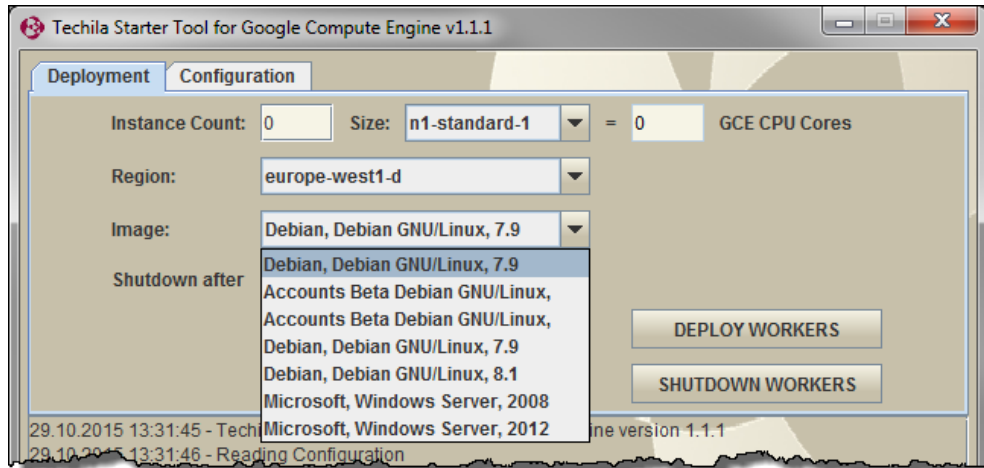


Figure 35. The OS dropdown menu can be used to select the Techila Worker operating system.

The selected OS will affect the time required to deploy the Techila Workers. Techila Workers with a Windows operating system typically take approximately 10-15 minutes to deploy. Techila Workers with a Linux operating system are typically deployed in 2-4 minutes. Please note that deployment times for your environment might differ from the ones mentioned here.

4. After configuring the desired number of instances as described in the previous step, click the **Deploy Instances** button to start the Techila Worker deployment process.

The settings in the example below will be used to deploy 10 Techila Workers on "n1-standard-1" instances with a Debian operating system. The Google Compute Engine components will be deployed in the "europe-west1-d" region. Automatic shutdown has been disabled by entering the value "0" in the "Shutdown after" field.

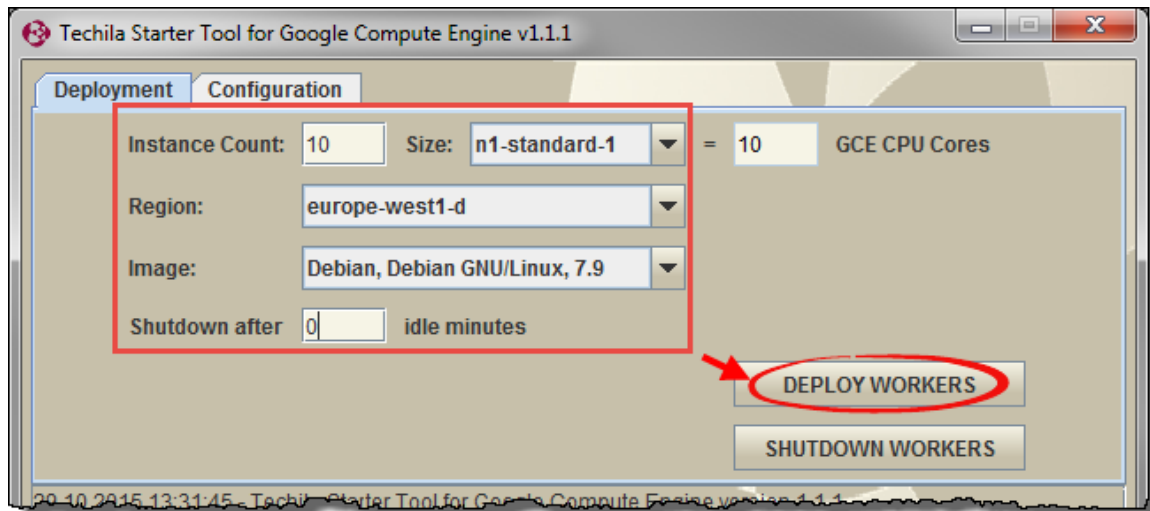


Figure 36. After specifying the desired number of instances and other parameters, clicking the "Deploy Workers" button can be used to start the deployment process.

5. After clicking the "Deploy Workers" button, all necessary Techila related Google Compute Engine components will be automatically created and the message "Instances deployed" will be displayed in the message area indicating that the instance deployment process has been started. This deployment process may take several minutes. Progress of the deployment process can be viewed from the Google Compute Engine console.

After the deployment process has been completed, the Techila Workers can be used in computational Projects.

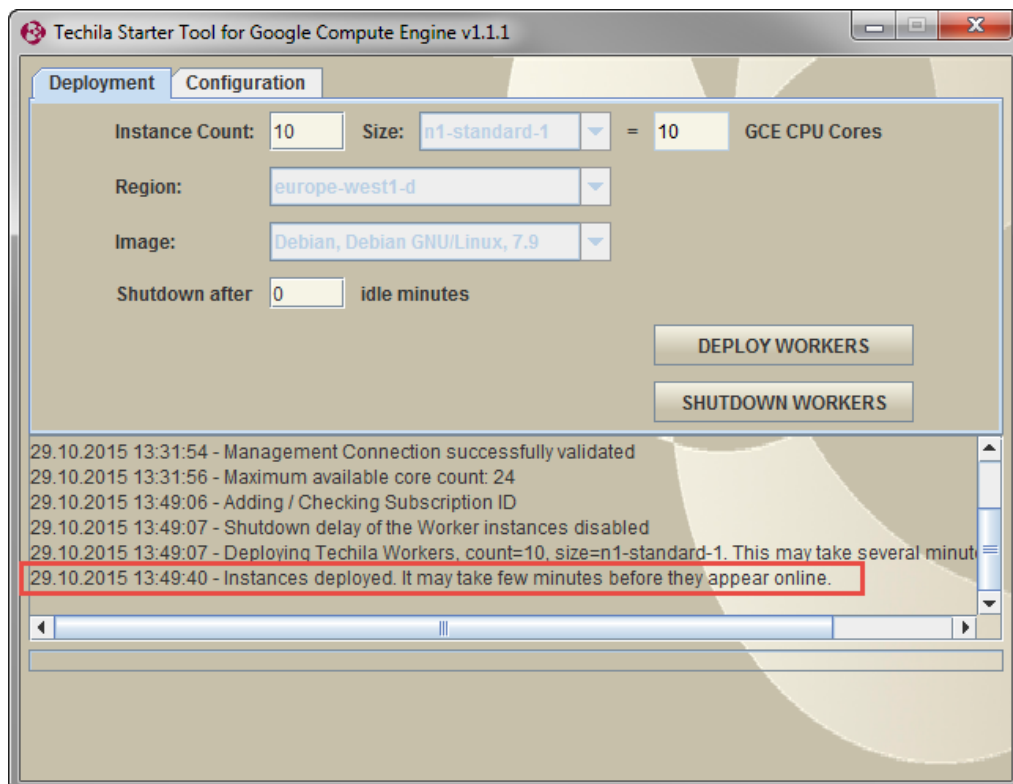


Figure 37. The "Instances deployed" message indicates that the deployment process has been successfully started.

After the instances have been deployed, the instances will be visible both in the Google Compute Engine console and in the Techila Web Interface.

The screenshot below illustrates how the Techila Workers deployed in the previous example are visible in the Techila Web Interface. The view corresponds to the administrators view (i.e. when using a Techila Web Interface account with administrative rights).

#	WID	Alias	Arch	CPUs	Jobs	Err	OS	Last seen	Uptime	Mem
8	191	TECHILAWORKER-1-1-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 56s	3714.0
9	192	TECHILAWORKER-1-3-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
10	193	TECHILAWORKER-1-2-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
11	194	TECHILAWORKER-1-4-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
12	195	TECHILAWORKER-1-5-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
13	196	TECHILAWORKER-1-7-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
14	197	TECHILAWORKER-1-8-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
15	198	TECHILAWORKER-1-10-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
16	199	TECHILAWORKER-1-6-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0
17	200	TECHILAWORKER-1-9-TESTUSER10.C.STOI	amd64	1/1	0	0	Linux	16:40	0d 00h 03m 52s	3714.0

Figure 38. Techila Workers deployed in Google Compute Engine will be visible in the "All Workers" page in the Techila Web Interface. During the previous example, 10 Techila Workers were deployed. These Techila Workers have been highlighted in the screenshot.

Respectively, the screenshot below illustrates how the Techila Workers deployed in the previous example are visible in the Google Compute Engine console.

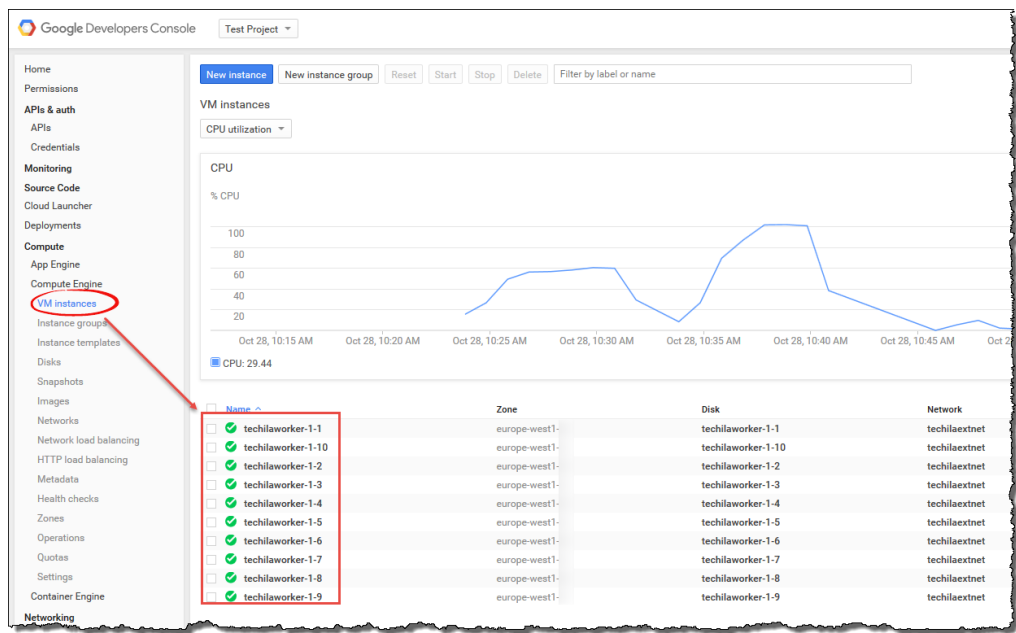


Figure 39. Instances hosting Techila Workers will be visible in the Google Compute Engine console. This example displays 10 instances that were deployed in the previous example.

Please see Chapter 7.1 and 7.2 for more information on how to view the status of the instances.

5. Removing Techila Workers from Google Compute Engine

This Chapter contains instructions for removing Techila Workers using the Techila Starter Tool.

Note! After removing Techila Workers, verify that the instances were successfully terminated using the Google Compute Engine console

1. If required, launch the Techila Starter Tool. If the Techila Starter Tool is already launched, continue from step 3.
2. If required, enter your keystore password
3. After entering your password, the "Deployment" tab will be automatically displayed. The message are will display information about currently deployed Techila Workers.

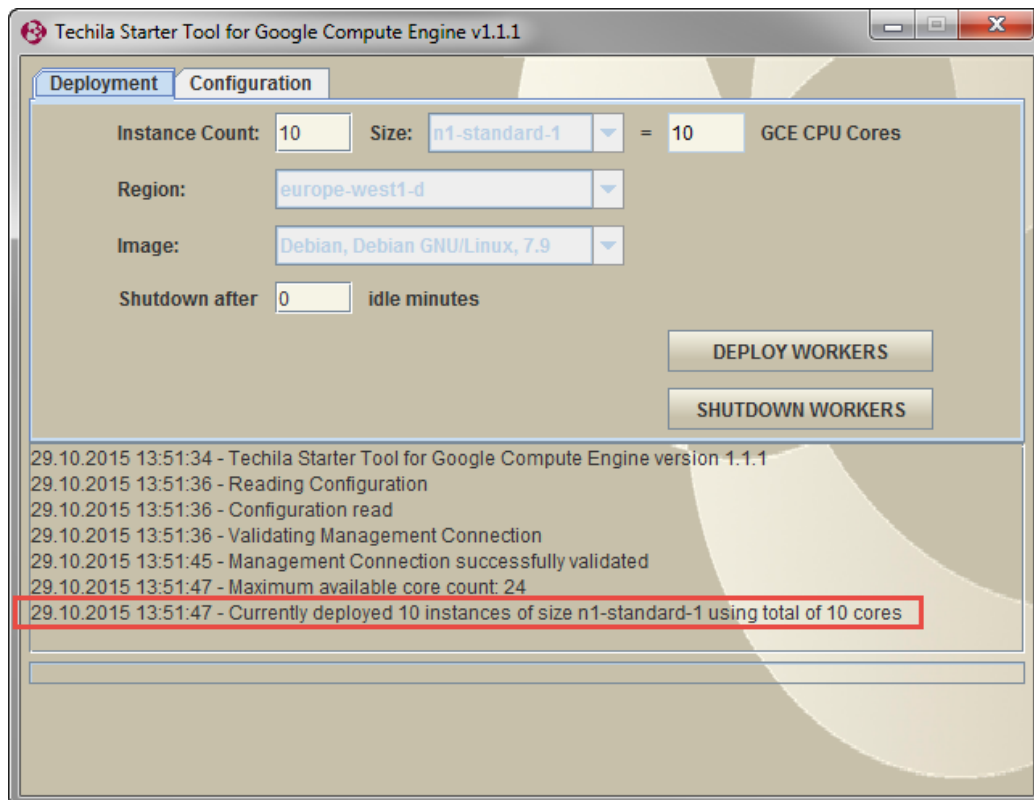


Figure 40. The view on the "Deployment" tab after restarting the Techila Starter Tool. In this example, there are currently 10 Techila Workers deployed on 'n1-standard-1' instances.

- Specify the new, desired number of instances in the "Instance Count" field.

Note! If you wish to shut down **ALL** instances that are currently deployed, click the **Shutdown Workers** button.

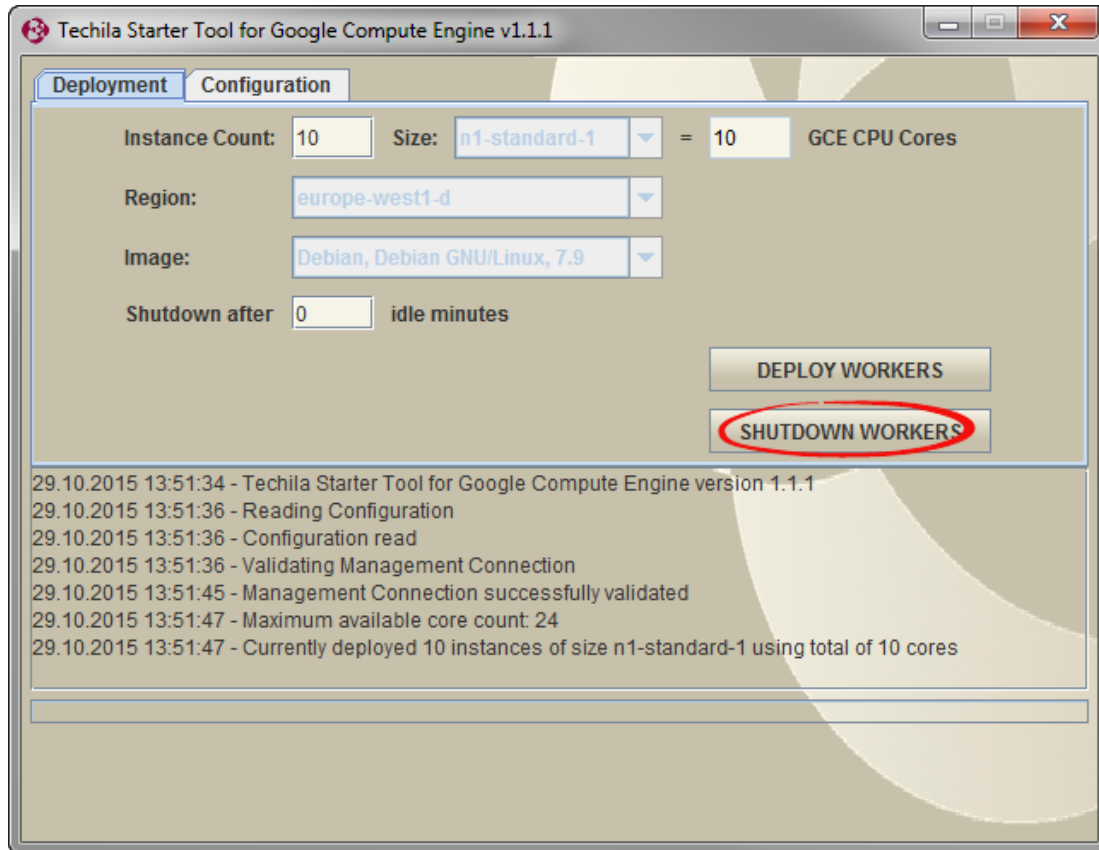


Figure 41. Clicking the "Shutdown Workers" button will remove all Techila Workers and delete all that were used to host Techila Workers.

After you have entered the desired instance count in the "Instance Count" field, click the **Deploy Instances** button. This will update the deployment count to match the new value. The settings used in the example below could be used to set the number of deployed instances to five (5).

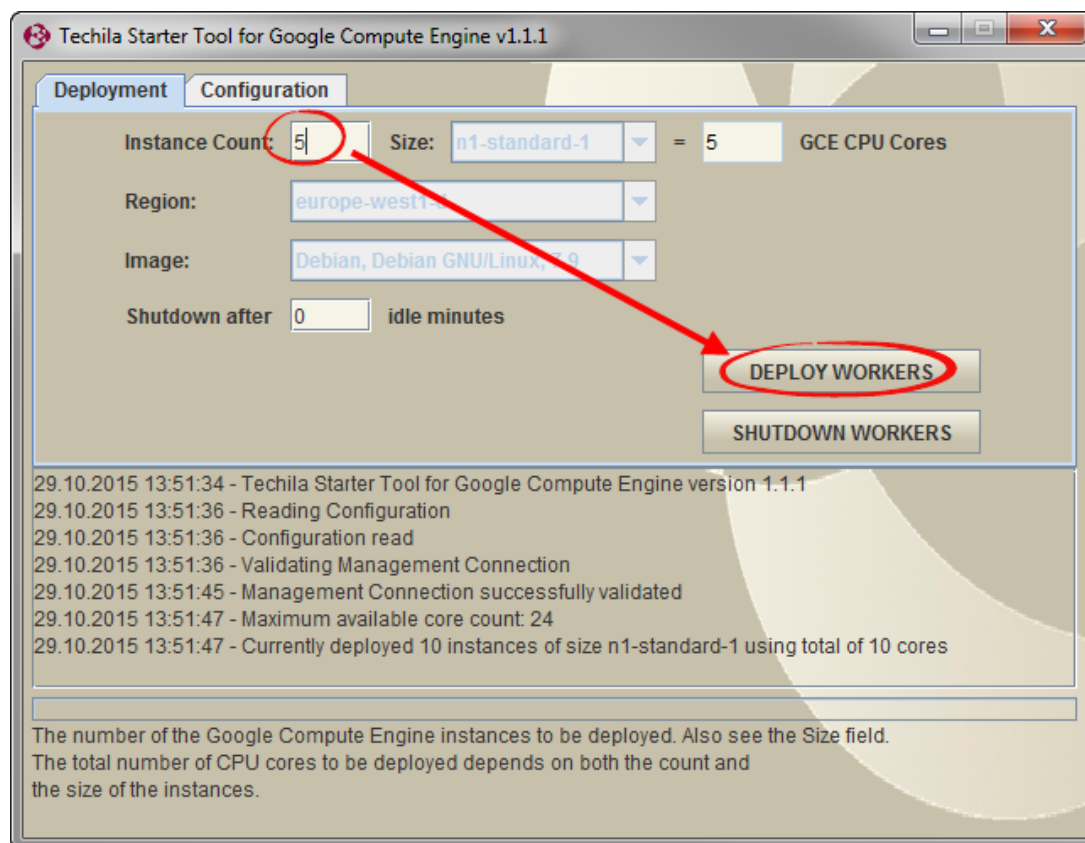


Figure 42. The "Instance count" field can be used to specify the desired instance count for the deployment.

5. After clicking the button, the deployment count will be modified to match the new value. This process may take several minutes. Progress of the instance termination process can be viewed in the Google Compute Engine console.

Note! Always check that the instances were successfully terminated from the Google Compute Engine console.

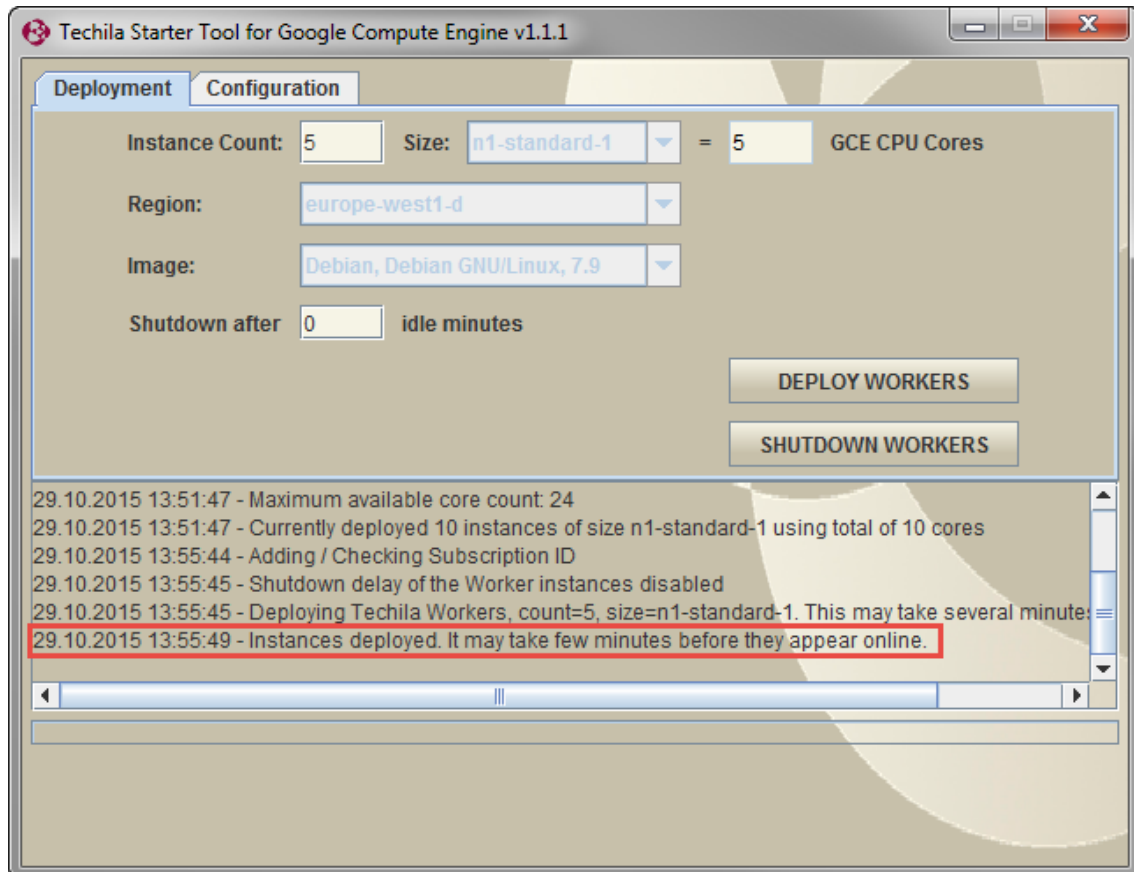


Figure 43. After updating the Techila Worker count, information will be displayed in the Techila Starter Tool message area.

As mentioned, clicking the **Shutdown Workers** button can be used to remove **ALL** currently deployed Techila Workers. The following steps illustrate how the remaining instances could be removed using this method.

6. To remove all remaining Techila Workers, click the **Shutdown Workers** button.

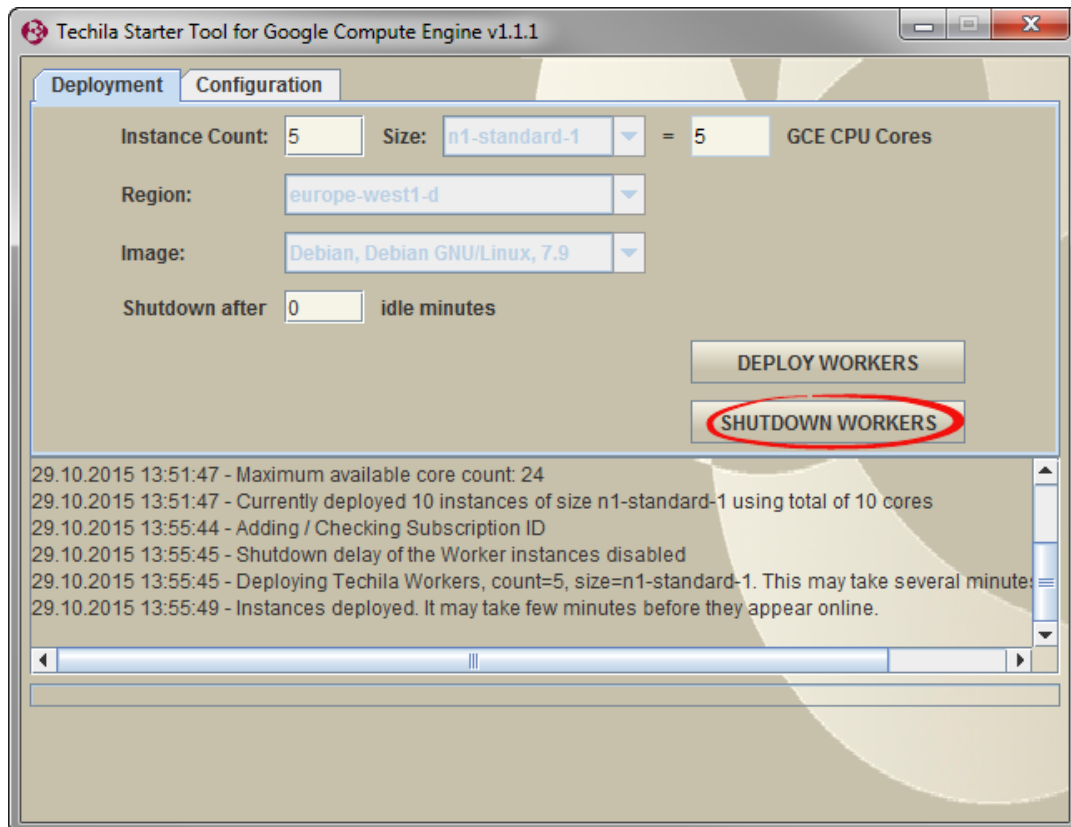


Figure 44. In this example, clicking the highlighted button terminate the remaining Google Compute Engine instances that are hosting the Techila Workers.

7. After clicking the button, all currently deployed Techila Workers will be removed. A popup window will also be displayed, which can be used to open the Google Compute Engine console in order to verify the status of the instances.

Click **OK** to open the Google Compute Engine console in your web browser.

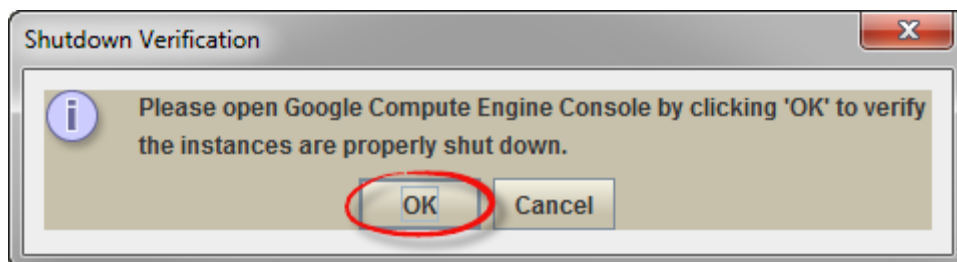


Figure 45. Open the Google Compute Engine console to verify the status of the instances.

8. If required, sign in using your login credentials.

9. Click on **Compute Engine** → **VM instances** and verify that all instances hosting Techila Workers have been terminated. The screenshot below illustrates a situation where no instances are deployed.

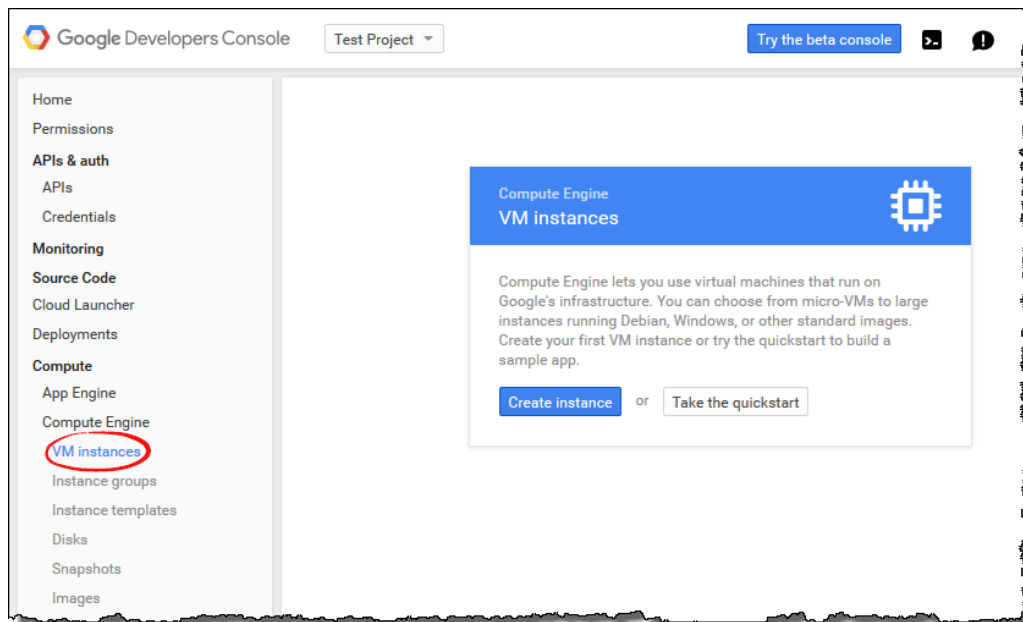


Figure 46. Navigate to the Google Compute Engine console.

Note! If the instances were not terminated successfully, terminate the instances using the Google Compute Engine console.

6. Removing Techila Distributed Computing Engine Google Compute Engine Components

This Chapter contains instructions for removing all Techila related Google Compute Engine components that are created when using the Techila Starter Tool to deploy Techila Workers. The steps described in this Chapter will also shut down all currently deployed Techila Workers.

Please note that steps described in this Chapter will typically only need to be performed if you wish to discontinue using GCE for deploying Techila Workers.

1. If required, launch the Techila Starter Tool. If the Techila Starter Tool is already launched, continue from step 4.
2. If required, enter your keystore password.
3. After entering your password, the "Deployment" tab will be automatically displayed.
4. On the "Deployment" tab, click the **Shutdown Workers** button to shut down all currently deployed Techila Workers and open the Google Compute Engine console in your web browser.

Note! If you do not have any Techila Workers deployed, click the "Open Google Compute Engine Console" button on the "Configuration" tab in the Techila Starter Tool to open the Google Compute Engine console.

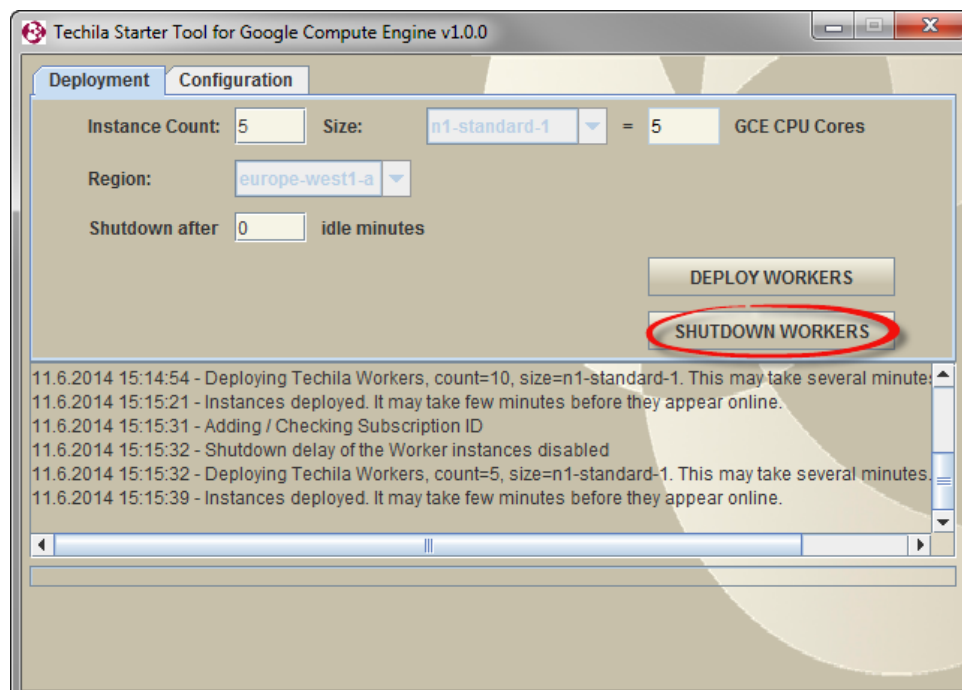


Figure 47. Clicking the highlighted button will remove all Techila Workers and terminate the instances that were hosting the Techila Workers.

5. After clicking the button, all currently deployed Techila Workers will be removed. A popup window will also be displayed, which can be used to open the Google Compute Engine console in order to verify the status of the instances.

Click **OK** to open the Google Compute Engine console in your web browser.

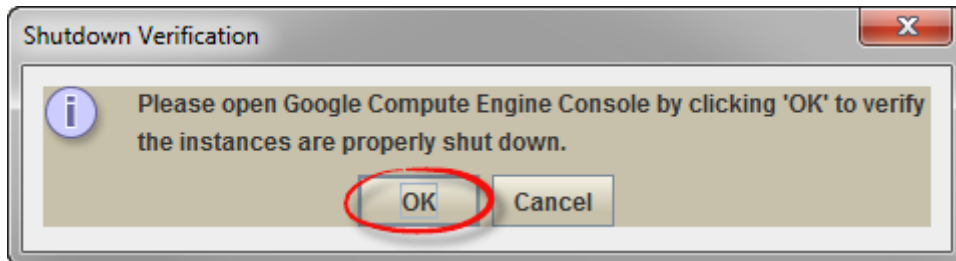


Figure 48. Open the Google Compute Engine console to verify the status of the instances.

6. If required, sign in using your Google user credentials.
7. Select your project and click **APIs & auth** → **Credentials**. Delete the Service Account by clicking the **Delete** button.

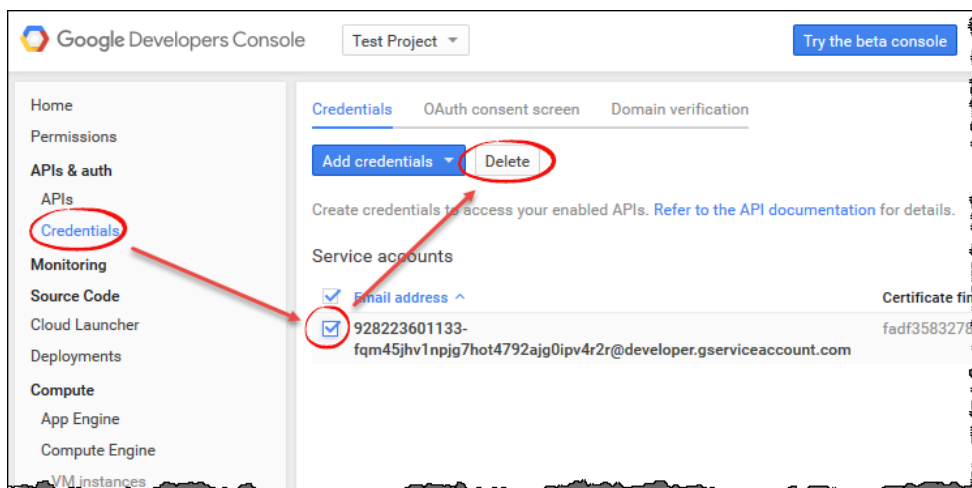


Figure 49. Delete the Service Account.

8. If prompted, click **Delete** to confirm the action.

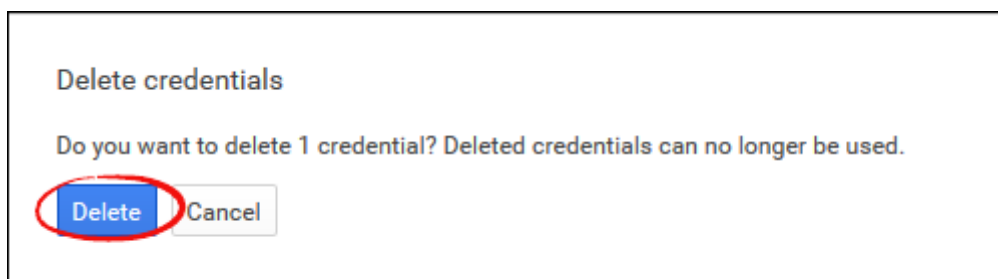


Figure 50. Confirm the action.

9. The following steps will verify that all data disks linked to the Techila Distributed Computing Engine (TDCE) environment have been deleted.

Click **Compute Engine** → **Disks** and verify that all disks have been deleted. The screenshot below illustrates a situation where all disks have been deleted successfully.

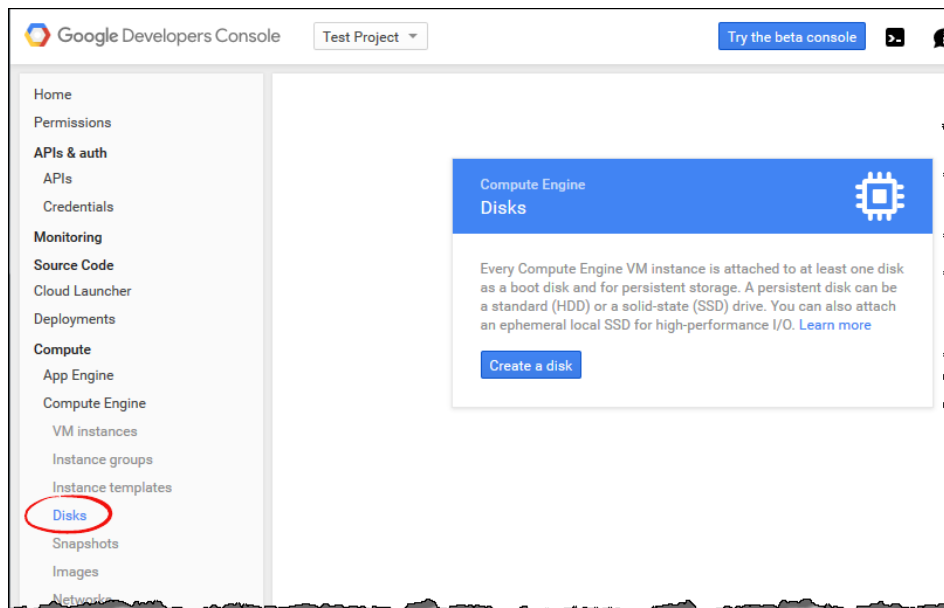


Figure 51. View when no disks exist.

Note! If there are disks linked to the TDCE environment, delete the disks using the Google Compute Engine console. You can identify Techila related disks from the 'techila' prefix in the disk name.

10. Click **Networking** → **Networks** and select the network named **techilaextnet**.

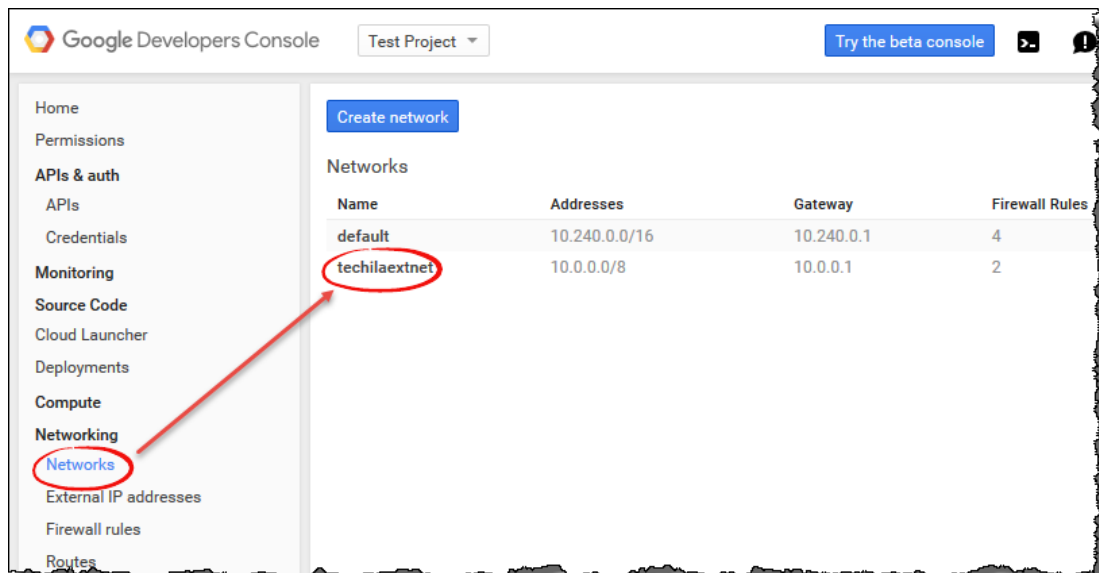


Figure 52. Select 'techilaextnet' by clicking on the name.

11. Delete the "techilaextnet" network by clicking the **Delete network** button. If required, confirm the action.

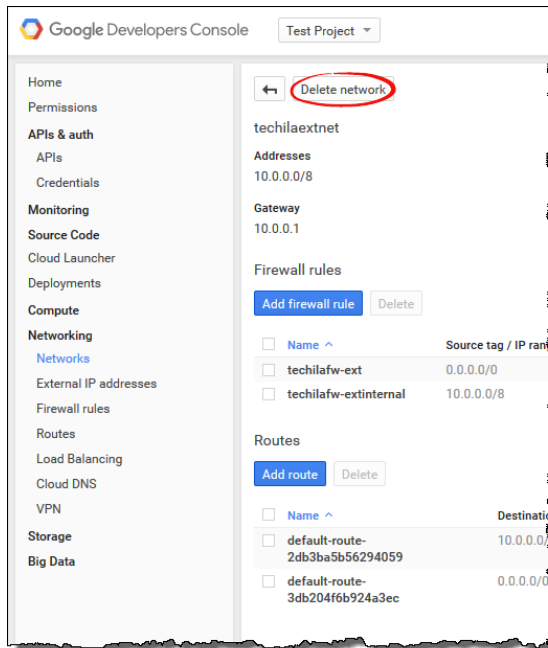


Figure 53. Delete the network.

12. Click **Compute Engine** → **Images** and select the 'techilaworker' image. Click the **Delete** button to delete the image. If required, confirm the action.

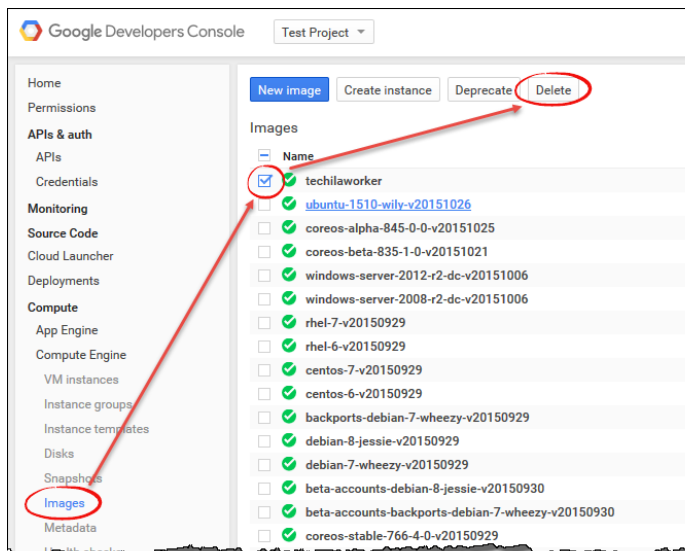


Figure 54. Select and delete the image named 'techilaworker'.

All Techila components have now been removed from your Google Compute Engine environment.

7. Appendix

7.1. Viewing the Status of the Techila Workers Using the Techila Web Interface

This Chapter contains instructions on how to view the status of Techila Workers using the Techila Web Interface.

1. Login to the Techila Web Interface.



Figure 55. Login either by using an administrative account or an end-user account.

2. Click on **Workers** --> **All Workers**.



Figure 56. Navigate to the All Workers page. This screenshot illustrates the view when logged in as a normal user with no administrative rights.

3. This will open a page displaying information about all Techila Workers that are currently active and connected to the Techila Server.

Please note that this page will display all Techila Workers that are connected to the Techila Server and can include Techila Workers that are not deployed in GCE.

The screenshot below illustrates the "All Workers" page when logged in as a user with administrative rights.

#	WID	Alias	Arch	CPUs	Jobs	Err	OS	Last seen	Uptime	Mem	Bundles	Free	Total	BM	CPU Load	Status
7	191	TECHILAWORKER-1-1-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 49s	3714.0	6	8527	9946	3000.0	2.16	running
8	192	TECHILAWORKER-1-3-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	2.00	running
9	193	TECHILAWORKER-1-2-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	2.00	running
10	194	TECHILAWORKER-1-4-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	19.00	running
11	195	TECHILAWORKER-1-5-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	2.00	running
12	196	TECHILAWORKER-1-7-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	1.01	running
13	197	TECHILAWORKER-1-8-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	12.97	running
14	198	TECHILAWORKER-1-10-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	1.00	running
15	199	TECHILAWORKER-1-6-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	1.98	running
16	200	TECHILAWORKER-1-9-TES	amd64	1/1	0	0	Linux	14.01	0d 00h 07m 04s	3714.0	6	8530	9946	3000.0	2.00	running

Figure 57. Administrative view of the "All Workers" page. The values in the "Alias" column for GCE Techila Workers will include the instance type and operating system. In this example, there are five Techila Workers deployed on "n1-standard-1" GCE instances with a Linux based operating system.

Respectively, the example screenshot below illustrates the "All Workers" page when logged in as a normal user without administrative rights.

#	WID	Arch	CPUs	Jobs	Err	OS	Last seen	Uptime	Mem	Bundles
7	191	amd64	1/1	0	0	Linux	14.04	0d 00h 10m 20s	3714.0	6
8	192	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
9	193	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
10	194	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
11	195	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
12	196	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
13	197	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
14	198	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
15	199	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6
16	200	amd64	1/1	0	0	Linux	14.04	0d 00h 09m 36s	3714.0	6

Figure 58. Normal view of the "All Workers" page. When logged in as a user without administrative rights, some of the columns (such as 'Alias') will not be displayed.

7.2. Viewing the Status of the Instances Using the Google Compute Engine Console

This Chapter contains instructions on how to view the status of currently deployed Google Compute Engine instances that are hosting the Techila Workers.

1. Using your web browser, login to the Google Compute Engine console.
2. Select your project and click **Compute Engine → VM instances**. This view will display all currently deployed instances.

In the example below, 10 Techila Workers are deployed on "n1-standard-1" machine types. The status of all instances in the example is "running", which is indicated by the small green checkmark icons on each line. Running is the typical status of Techila Workers that are able to process computational Jobs.

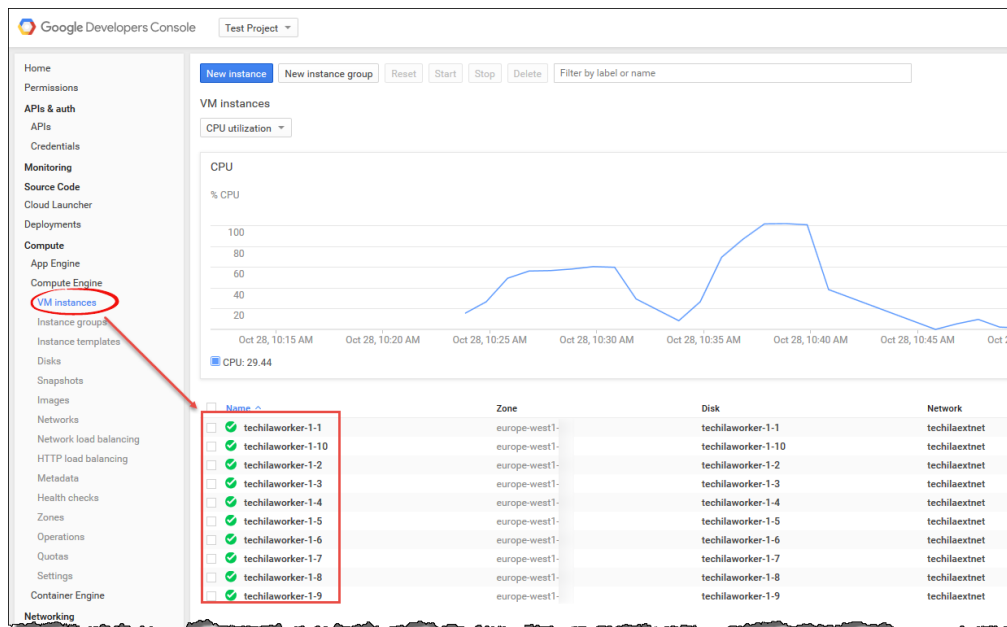


Figure 59. Status of the instances can be viewed in the "VM instances" section.

7.3. Verifying That No Techila Worker Instances Are Deployed

This Chapter contains instructions on how to verify that no instances are deployed. This verification typically needs to be done after shutting down Techila Workers using the Techila Starter Tool.

1. Navigate to the Google Compute Engine console. The Google Compute Engine console can be opened by clicking **OK** in the popup window displayed after clicking the "Shutdown Workers" button.

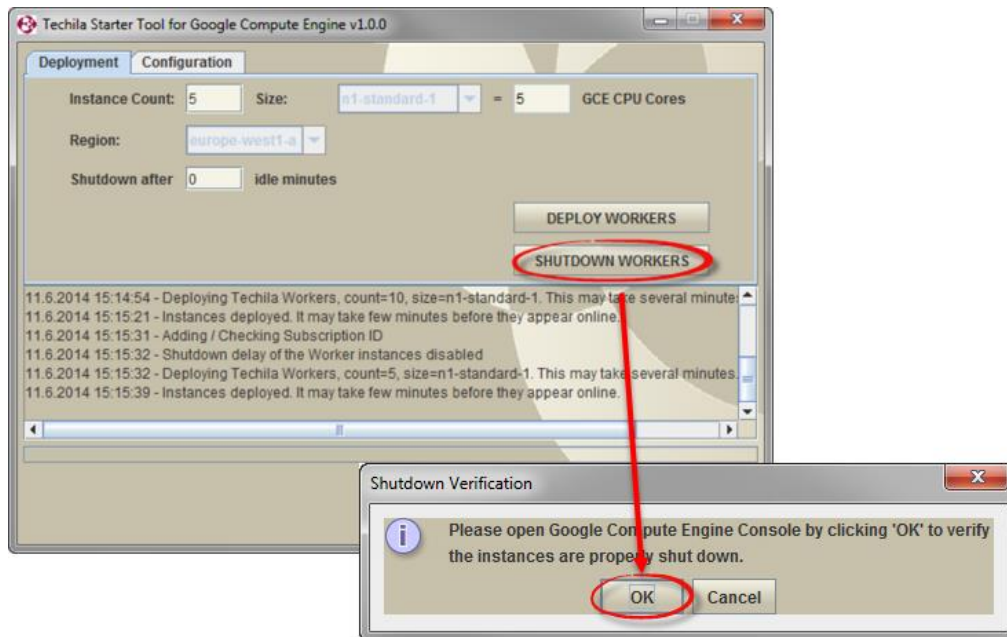


Figure 60. Opening the Google Compute Engine console after shutting down Techila Workers.

Note! The Google Compute Engine console can also be opened by clicking the "Open Google Compute Engine console" button in the "Configuration" tab in the Techila Starter Tool.

2. If required, sign in using your GCE login credentials.
3. Select your project and click **Compute Engine → VM instances**. The screenshot below illustrates a situation where no instances are deployed.

Note! If the instances were not terminated successfully, terminate the instances using the Google Compute Engine console.

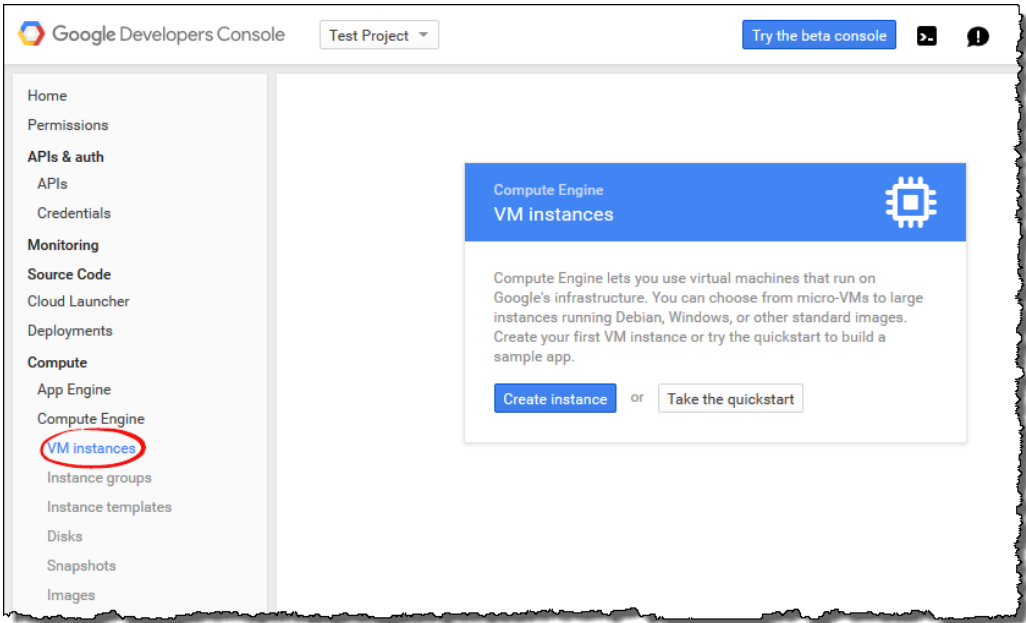


Figure 61. View when no instances are deployed.