TECHILA® WORKER DEPLOYMENT GUIDE FOR AMAZON WEB SERVICES EC2

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 Amazon Web Services EC2 using the Techila Starter Tool for Amazon Web Services. For the remainder of this document "Techila Starter Tool for Amazon Web Services" 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 Amazon Web Services EC2 can be found in the document "Techila Distributed Computing Engine Set-Up Guide for Amazon Web Services EC2". 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 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 Amazon Web Services EC2 using the Techila Starter Tool. This tool is included in the file 'techila_sdk_aws_plugin.zip', which can be downloaded from the Techila Extranet.

Chapter 4 contains instructions for deploying Techila Workers in Amazon Web Services EC2.

Chapter 5 contains instructions for removing Techila Workers from Amazon Web Services EC2

Chapter 6 contains instructions for removing all TDCE related Amazon Web Services EC2 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 AWS console.

2. Requirements

2.1. Techila Server Requirements

In order to deploy Techila Workers in Amazon Web Services EC2, 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 – Amazon EC2".

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 Amazon Web Services EC2 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 / hostname 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 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 for Amazon Web Services EC2, 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
```

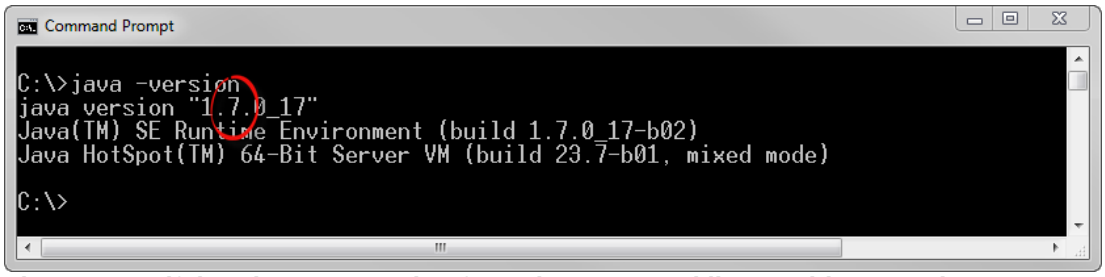


Figure 1. Verifying the Java version from the command line. In this example, Java Standard Edition 7 is available.

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 Amazon Web Services EC2 Techila Workers to an existing Techila Distributed Computing Engine (TDCE) environment using the Techila Starter Tool. 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_aws_plugin.zip'. The download link for the file is located in the "End-User Downloads" section.

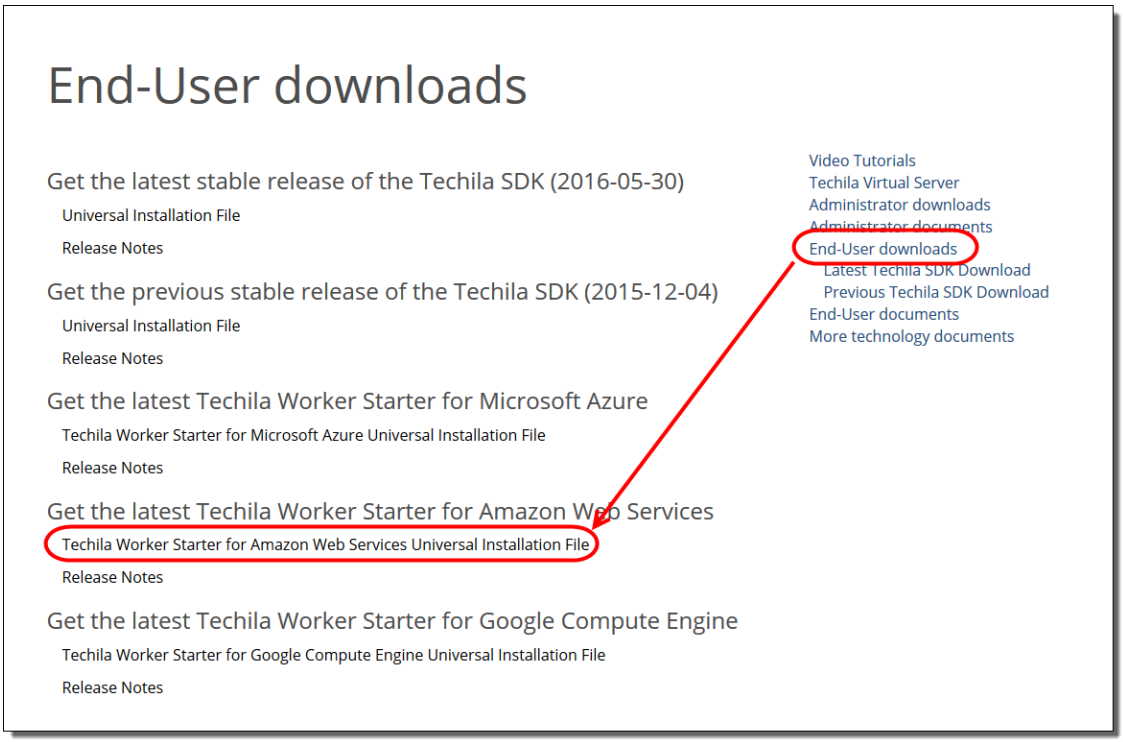


Figure 2. Download the Techila Starter Tool.

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

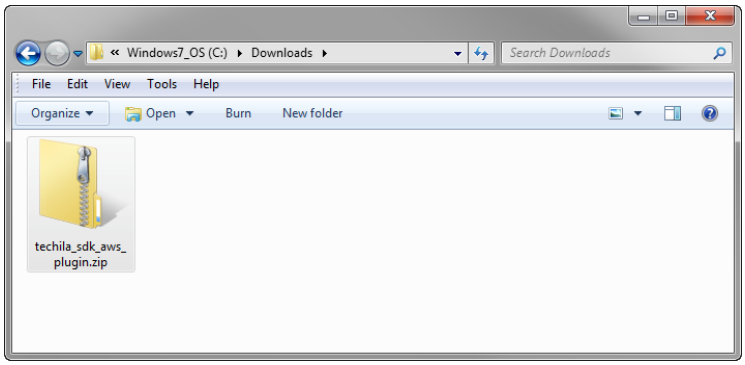


Figure 3. The Techila SDK plugin is delivered in a ZIP file.

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

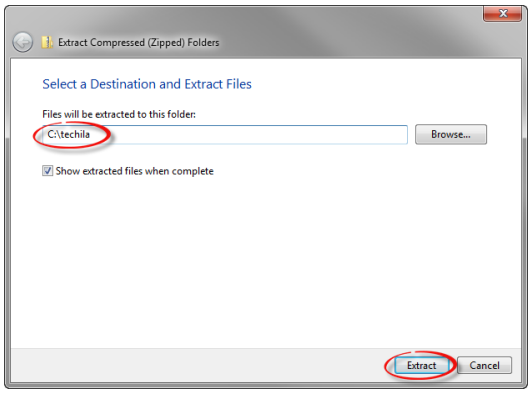


Figure 4. Extract the plugin components over your existing Techila SDK.

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

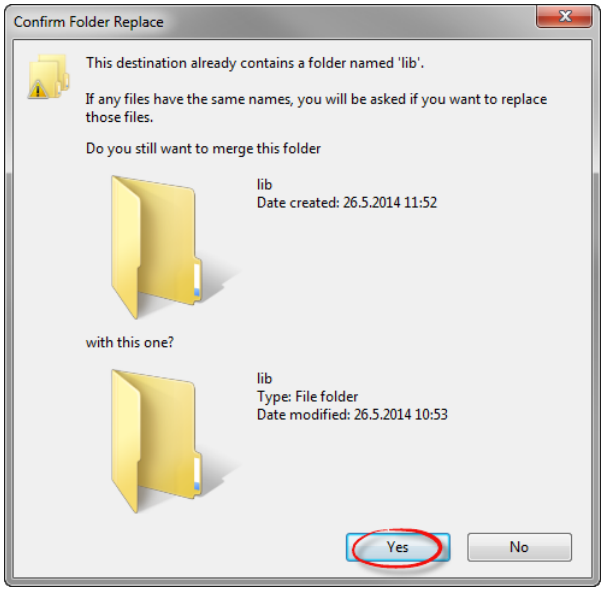


Figure 5. The extraction process will extract additional files to the 'lib' directory of the Techila SDK.

6. If required, overwrite any old files.

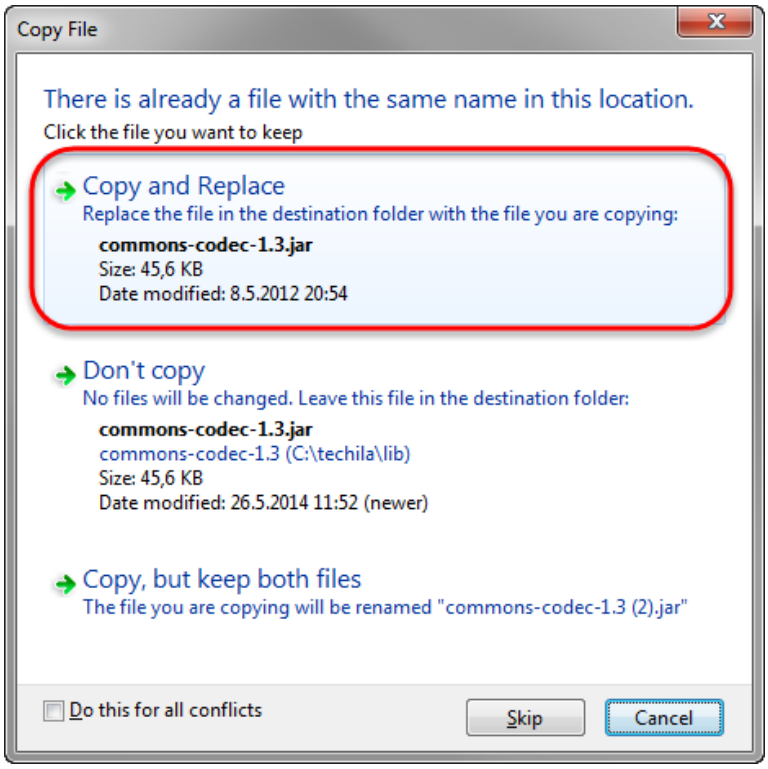


Figure 6. If prompted, overwrite old files.

7. 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).

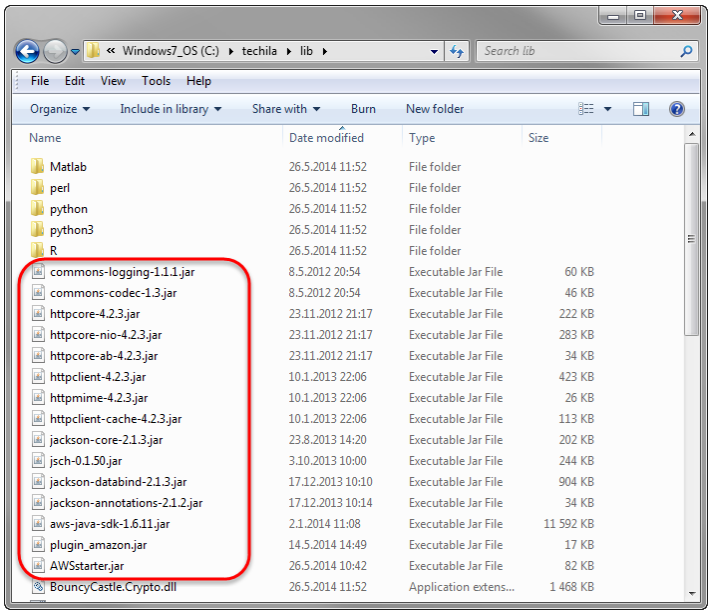


Figure 7. Techila AWS plugin components.

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 AWS security credential 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 'AWSstarter.jar' file icon. The application can also be launched from the command line using command 'java -jar AWSstarter.jar'.

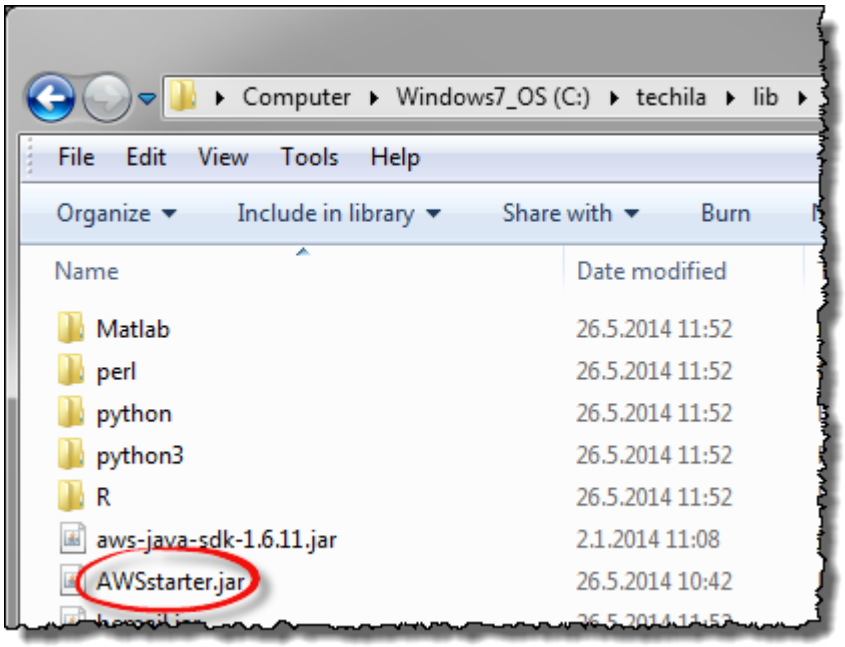


Figure 8. Launch the application by double clicking on the 'AWSstarter.jar' file icon.

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

Figure 9. 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 Amazon Web Services Console by clicking **Open AWS console** button.

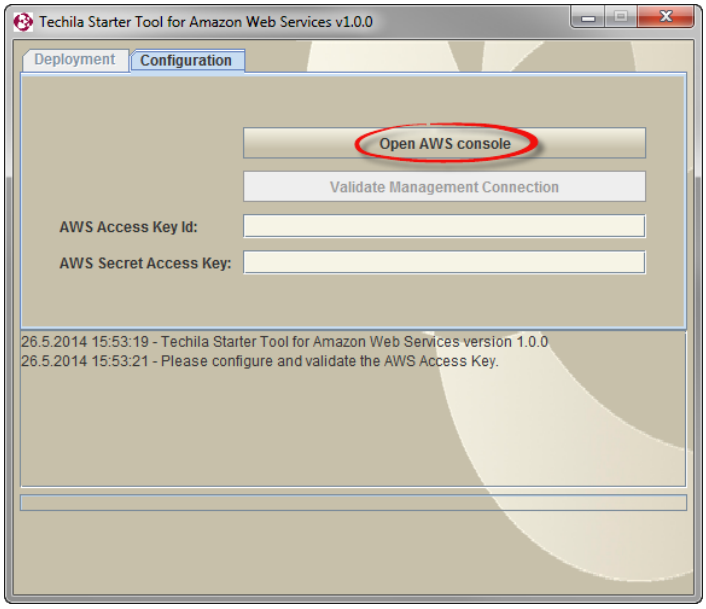


Figure 10. Clicking the highlighted button will open the AWS console in your default web browser.

4. Click the **Sign in to the AWS console** button to sign-in.

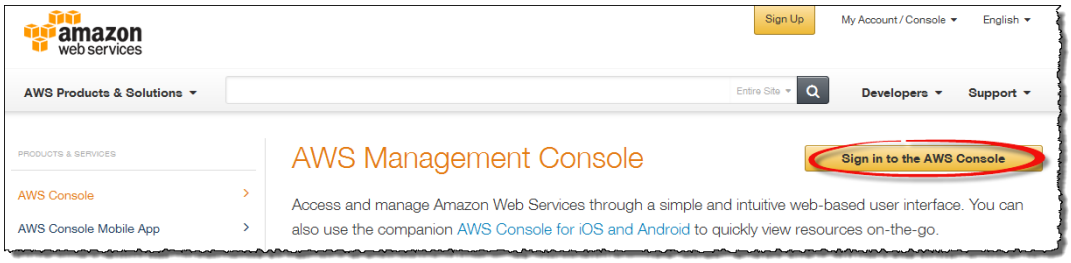


Figure 11. Signing in is required in order to access the AWS console.

5. Sign in using your login credentials.

   Note! In order to login by using your Amazon account, your account needs to be signed up for AWS.

   Note! In order to login using your AWS IAM (Identity and Access Management) User credentials you will need to sign in using your "IAM User Sign-In URL". This URL can be retrieved from the AWS console.

Figure 12. Sign in to the AWS console using your login credentials. In this screenshot, signing in will be done as "Example User", which is an IAM User.

6. After signing in, click **IAM** under "Deployment & Management.

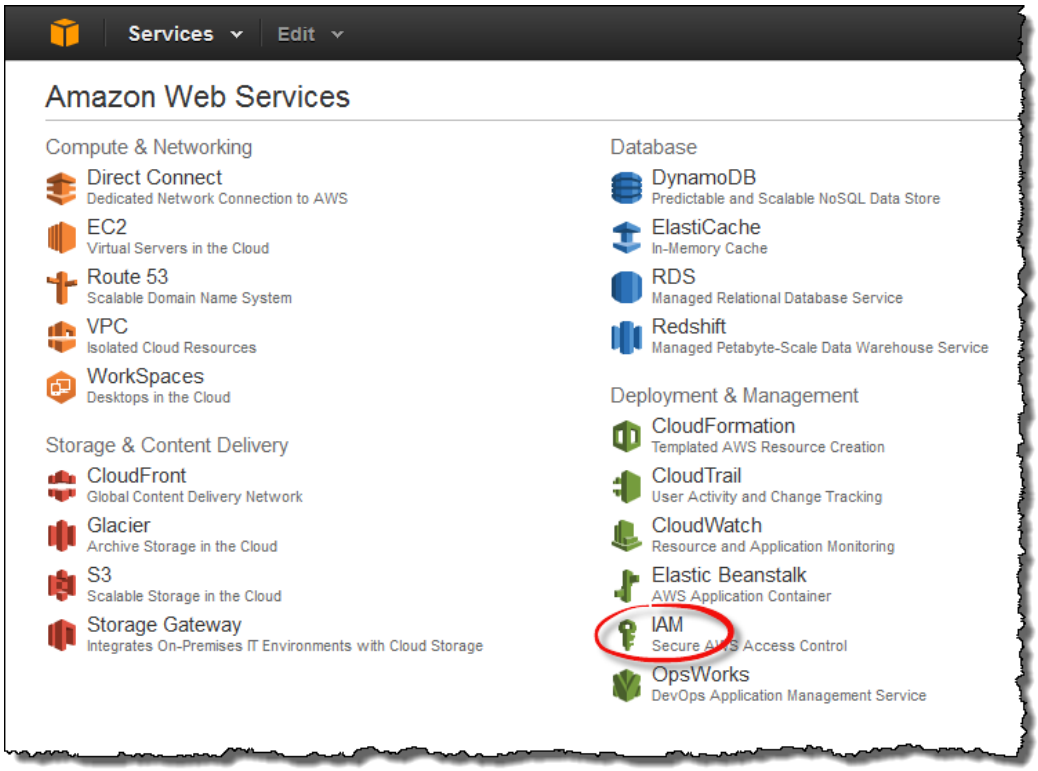


Figure 13. Click IAM to manage access credentials.

7. Select **Users** and click the **Create New Users** button.

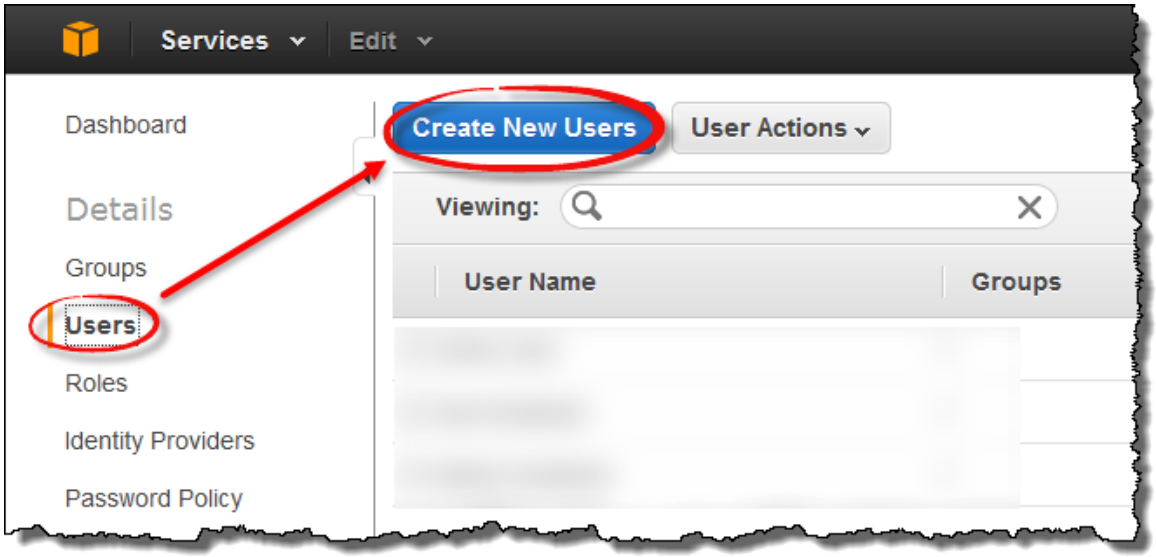


Figure 14. Adding a new User.

8. Enter the User name and tick the checkbox for "Generate an access key for each User". After filling the fields, click the **Create** button.

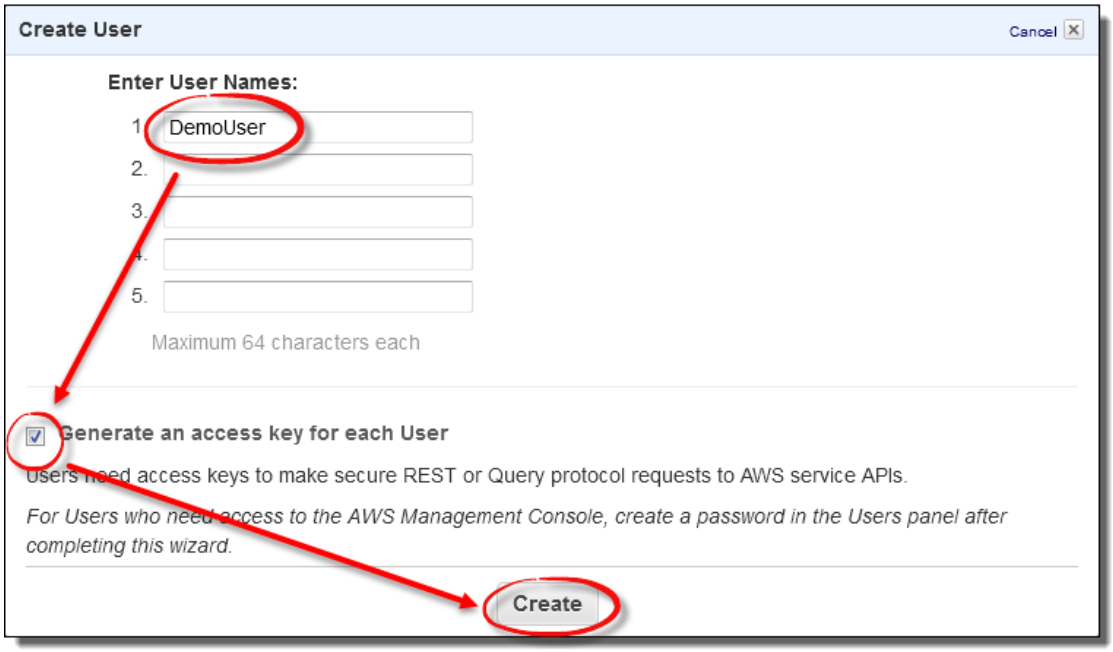


Figure 15. Filling out the User name.

9. After adding the User, User security credentials can be accessed. Click the **Show User Security Credentials** option.

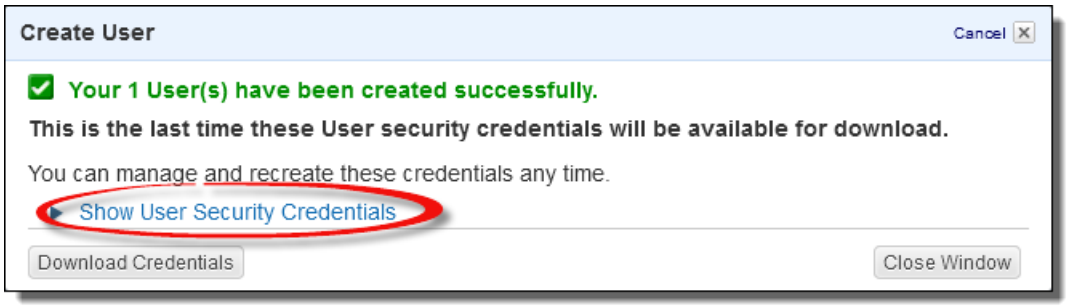


Figure 16. View the security credentials.

10. After displaying the security credentials, copy the information to the Techila Starter Tool.

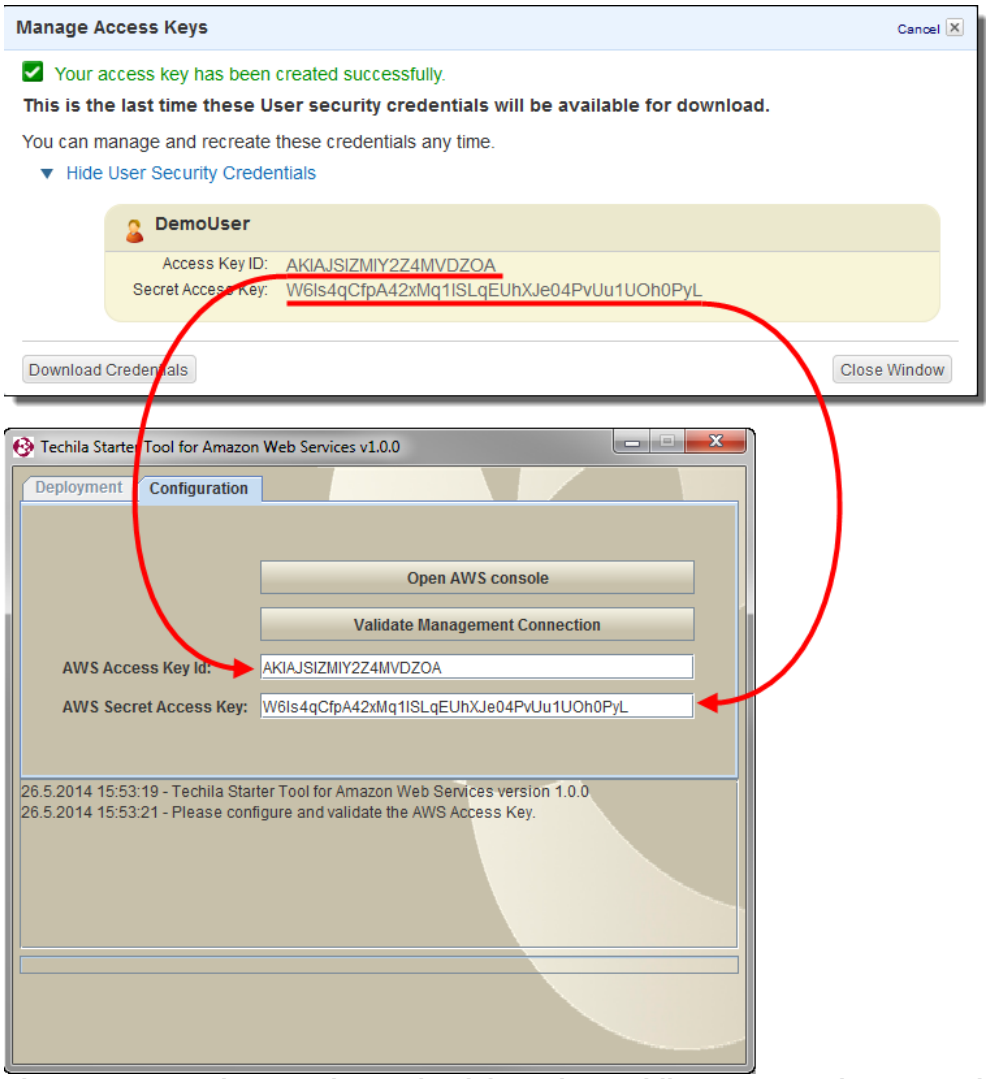


Figure 17. Copy the security credentials to the Techila Starter Tool. Text can be pasted to the text fields by using the Ctrl-V keyboard shortcut or the right mouse button menu.

11. After copying the security credentials, go back to your web browser and close the window by clicking the **Close Window** button.

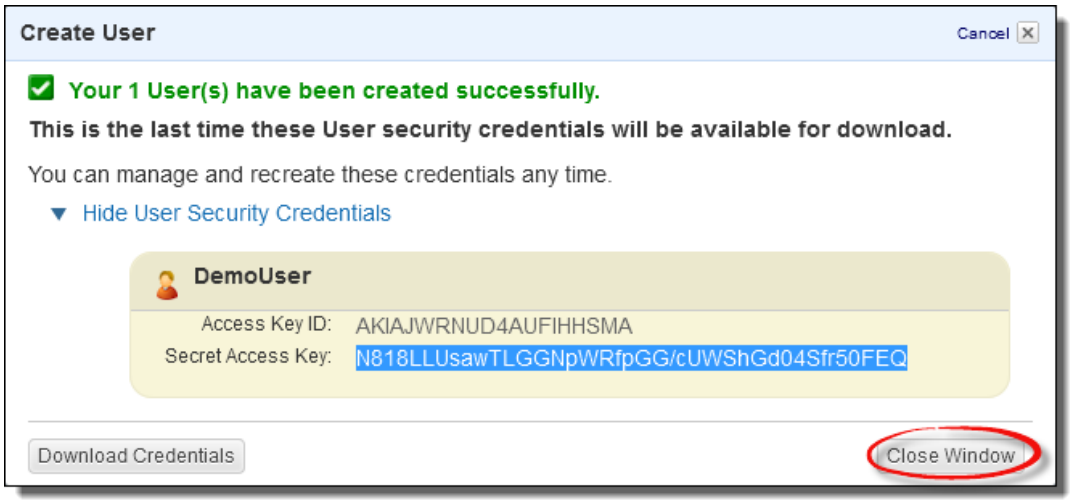


Figure 18. Close the window.

At this point, you might be prompted to download the security credentials in a file. If you want, you can click the "Download Credentials" button to download the credentials for safe keeping. Click the **Close Window** button to continue.

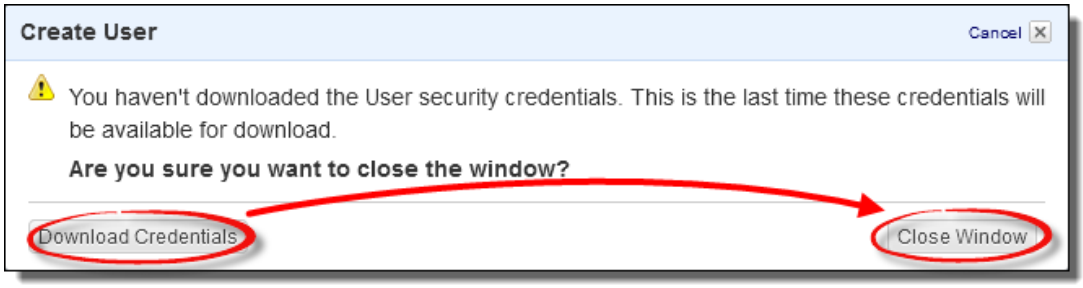


Figure 19. Login credentials can be downloaded by clicking the "Download Credentials" button. Click the "Close Window" button to continue.

12. Next steps will consist of giving the AWS User elevated permissions, which are required in order to use the Techila Deployment Tool.

    Select the User by clicking on the User Name.

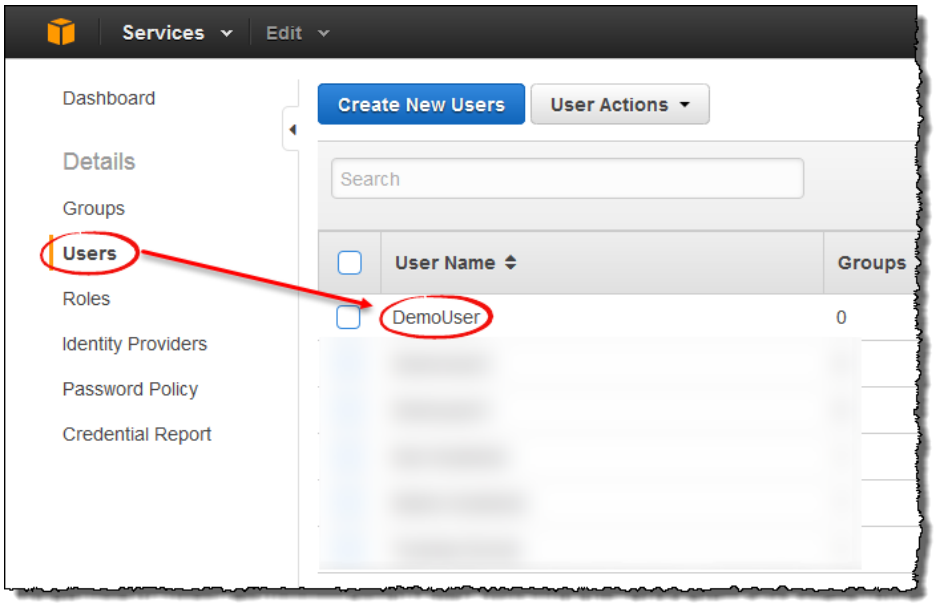


Figure 20.Modifying User permissions.

13. Under "Permissions", click the **Attach Policy** button.

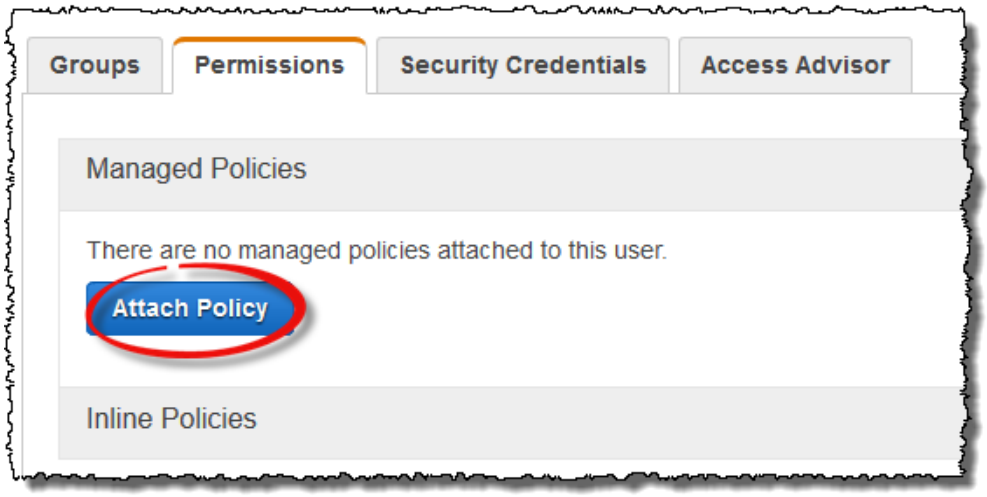


Figure 21. Attaching a user policy.

14. Select the **Power User Access** by ticking the highlighted checkbox and clicking the **Attach Policy** button.

    Tip! You can use the text box to easily search for the correct policy.

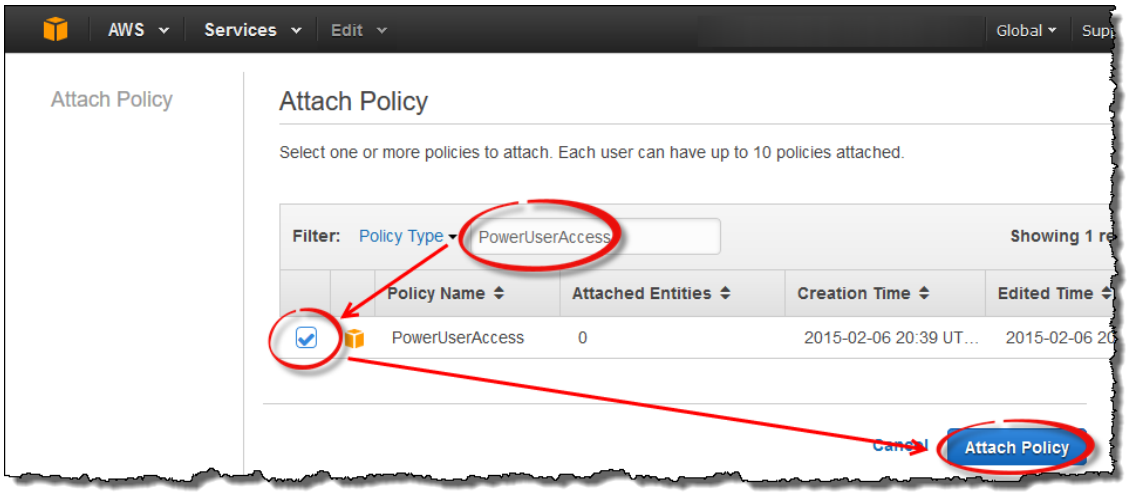


Figure 22. Selecting the Power User policy.

15. Go back to the Techila Starter Tool and click the **Validate Management Connection** button.

    The values entered in the "AWS Access Key id" and "AWS Secret Access Key" fields will be saved in a configuration file called 'aws.config'. This file will be automatically generated and stored in the directory that contains the 'techila_settings.ini' configuration file. When the Techila Starter Tool is restarted, the values will be retrieved from the 'aws.config' file automatically.

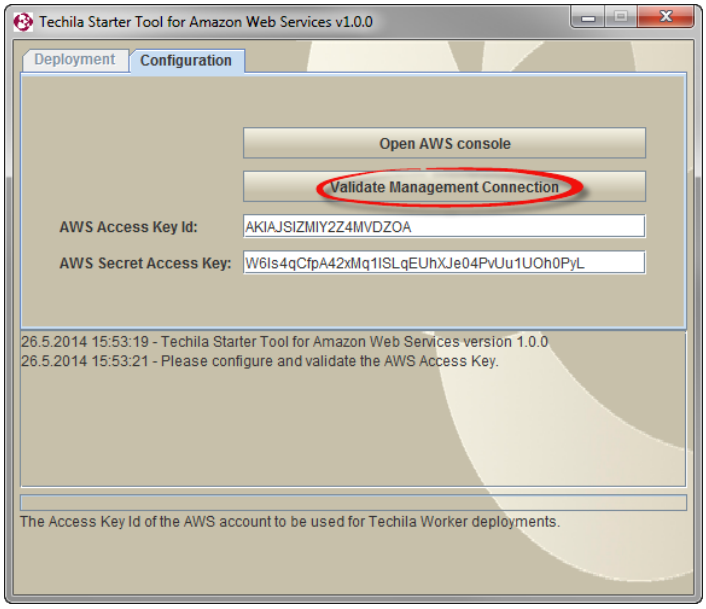


Figure 23. Clicking the highlighted button will validate that your Amazon Web Services EC2 subscription has been configured correctly.

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

    The view will also automatically change to the Deployment tab, which can be used to deploy Techila Workers in Amazon Web Services EC2.

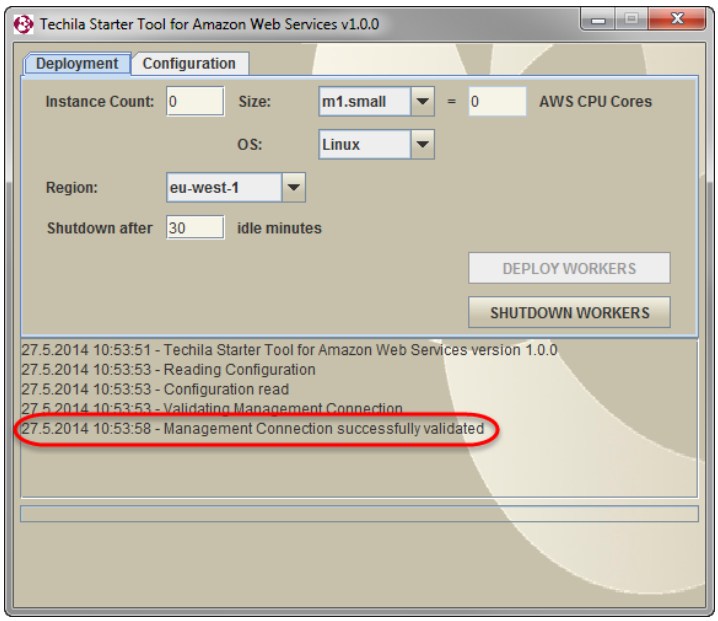


Figure 24. The "Deployment" tab will be automatically displayed after the management connection has been successfully validated.

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 Amazon Web Services EC2

This Chapter contains information on how to deploy Techila Workers in Amazon Web Services EC2 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 'AWSstarter.jar' file icon. If the Techila Starter Tool is already launched, continue from step 3.

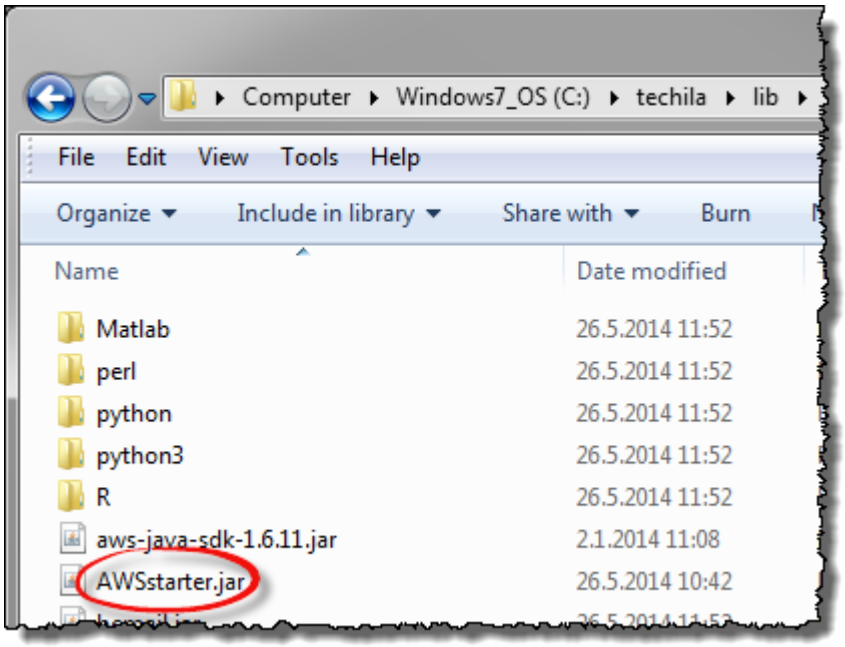


Figure 25. Launch the application by double clicking on the highlighted file icon.

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 Amazon Web Services EC2.

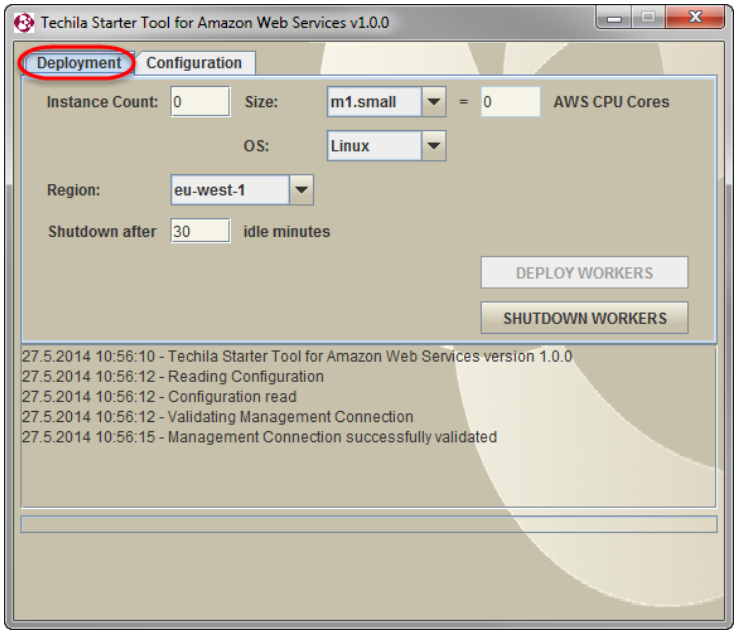


Figure 26. The "Deployment" tab will be automatically displayed after the management connection has been successfully validated.

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 operating system (dropdown menu "OS")
- Instance shutdown delay (field "Shutdown after")
- Deployment region for the Amazon Web Services EC2 components (dropdown menu "Region")

These settings are explained below:

TECHILA WORKER INSTANCE SIZE

The "Size" dropdown menu can be used to select the Amazon Web Services EC2 instance type that will be used when deploying Techila Workers. The maximum number of instances you can deploy will be determined by the instance quota of your Amazon Web Services account.

When selecting the Techila Worker Size, it is recommended that you choose the instance 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://aws.amazon.com/ec2/pricing/

The total amount of CPU cores that can be deployed can be increased by selecting an instance type with a large number of CPU cores per instance. The examples below illustrate the difference in the amount of CPU cores that can be deployed when changing the selected instance type.

Example 1: John plans on deploying 20 instances using m1.small instances (1 core each). This means that John will have access to **20 * 1 = 20 CPU cores** of computing capacity.

Example 2: John plans on deploying 20 instances using c3.8xlarge instances (32 cores each). This means that John will have access to **20 * 32** = **640 CPU cores** of computing capacity.

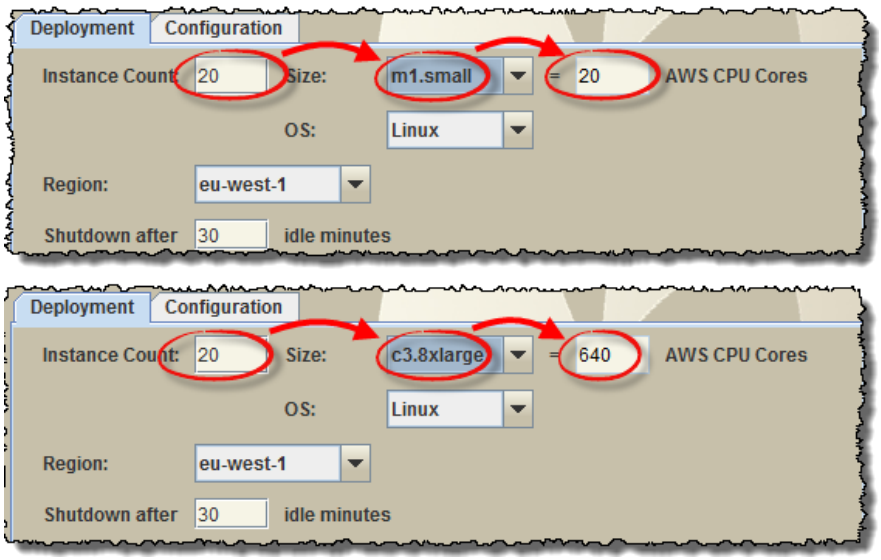


Figure 27. Selections made using the "Size" dropdown menu affect the maximum number of Techila Workers that can be deployed.

Note! The "Size","OS" and "Region" drop-down menus will only be available if the environment does not already contain Techila Workers that 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 instance size you selected during the initial deployment. In the example below, there are existing Techila Workers deployed on "m1.small" instances. As a result of this, all subsequent Techila Workers will also be deployed on "m1.small" instances.

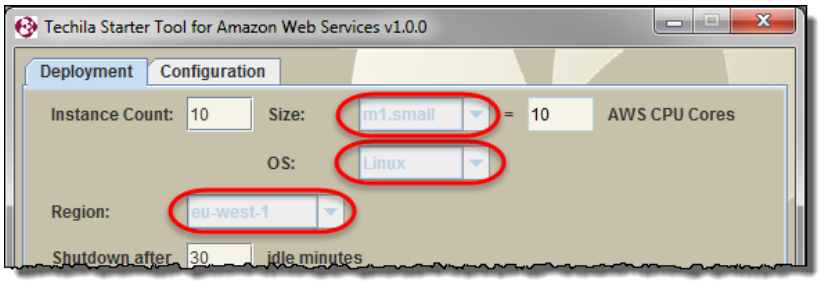


Figure 28. After Techila Workers have been deployed, the drop-down menus will be disabled. Additional Techila Workers will automatically be deployed on the same instance size that was specified when deploying the first Techila Workers.

Note! After you shutdown all currently deployed Techila Workers, 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 "m1.small". These settings could be used to deploy 10 Techila Workers on "m1.small" instances.

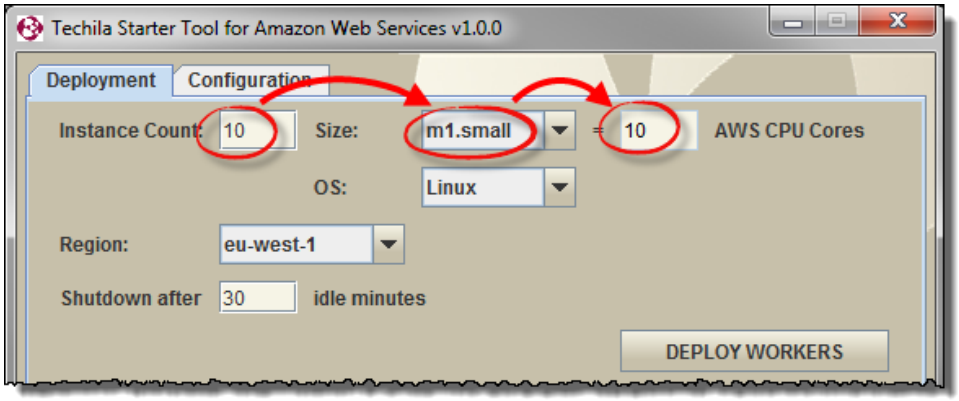


Figure 29. The value defined in the "Instance Count" field is used to control the number of Amazon Web Services EC2 instances that should be deployed as Techila Workers.

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 "m1.small" 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.

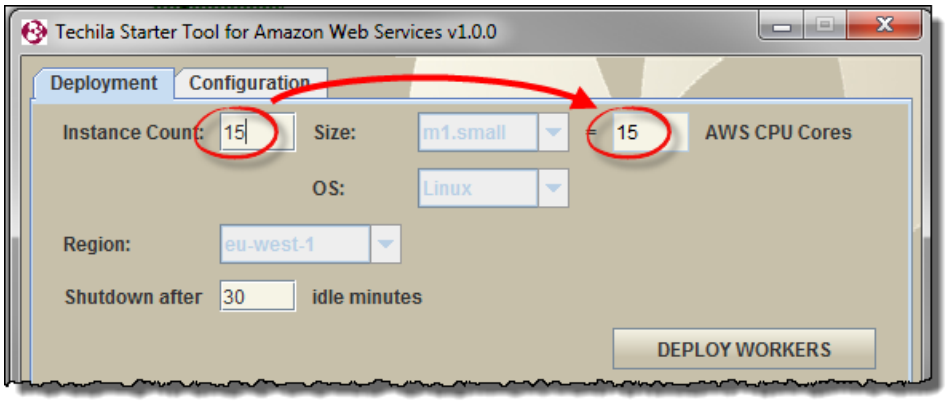


Figure 30. The Techila Worker deployment count can be modified by specifying the desired number of instances in the "Instance Count" field. Also note that when modifying the number of deployed Techila Workers, the "Size" field will be greyed out because Techila Workers have already been deployed.

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 AWS 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 counter. Please note that this also means that if the Techila Workers have only been deployed, but no Projects have been created, the instances will not be automatically shutdown.

The 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 instances will be shutdown.

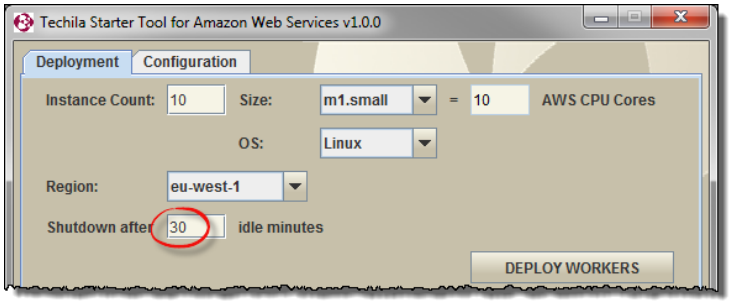


Figure 31. Specifying that Techila Workers should be shut down after 30 idle minutes.

Automatic shutdown can be disabled by entering the value 0 to the "Shutdown after" field. This is illustrated below in Figure 32.

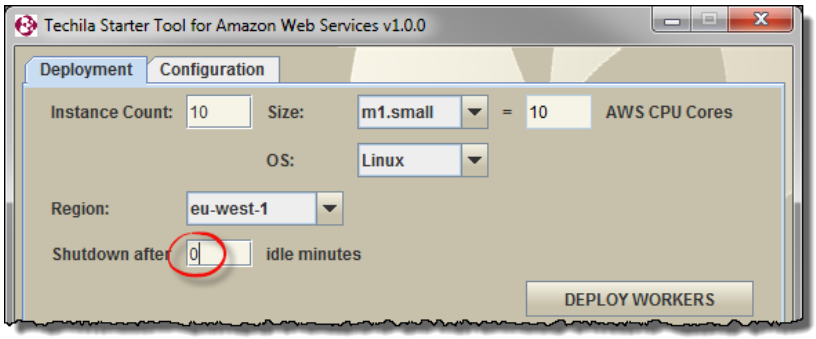


Figure 32. Specifying that Techila Workers should not be automatically shutdown

DEPLOYMENT REGION FOR THE AMAZON WEB SERVICES EC2 COMPONENTS

The "Region" dropdown menu can be used to specify the location of the Amazon Web Services EC2 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, you will need to shut down any Techila Workers that are currently deployed.

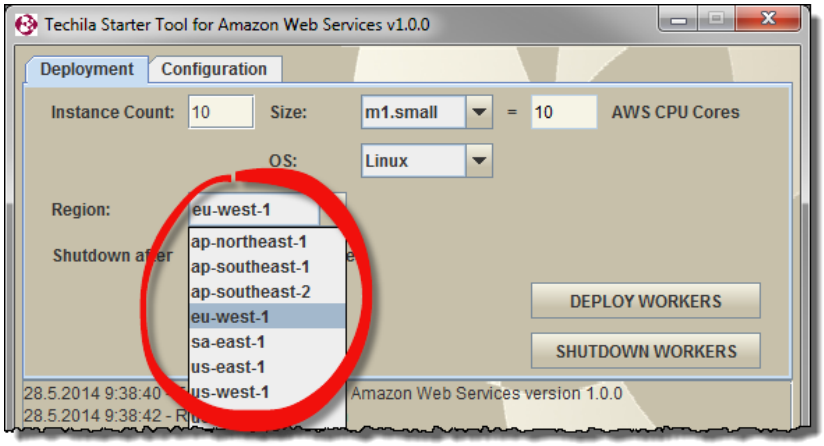


Figure 33. The geographical location of the Techila Distributed Computing Engine related Amazon Web Services EC2 components can be specified using the dropdown menu.

TECHILA WORKER INSTANCE OPERATING SYSTEM

The "OS" dropdown menu can be used to select the operating system of the Techila Workers that will be deployed. The following operating systems are available in the dropdown menu:

- Linux (Amazon Linux AMI; Linux image provided by Amazon Web Services.)
- Windows (Windows Server 2012 RTM)

The dropdown menu is illustrated in the screenshot below.

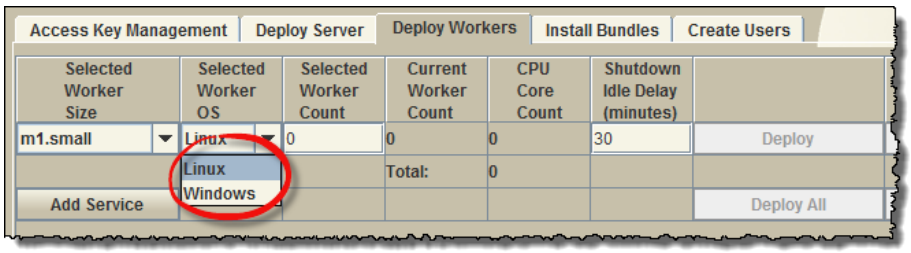


Figure 34. The OS dropdown menu can be used to select the Techila Worker operating system.

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 described in the previous step, click the **Deploy Instances** button to start the deployment process.

   The settings in the example below will be used to deploy 10 Techila Workers on "m1.small" instances. The Amazon Web Services EC2 components will be deployed in the "eu-west-1" region. Automatic shutdown has been disabled by entering the value "0" in the "Shutdown after" field.

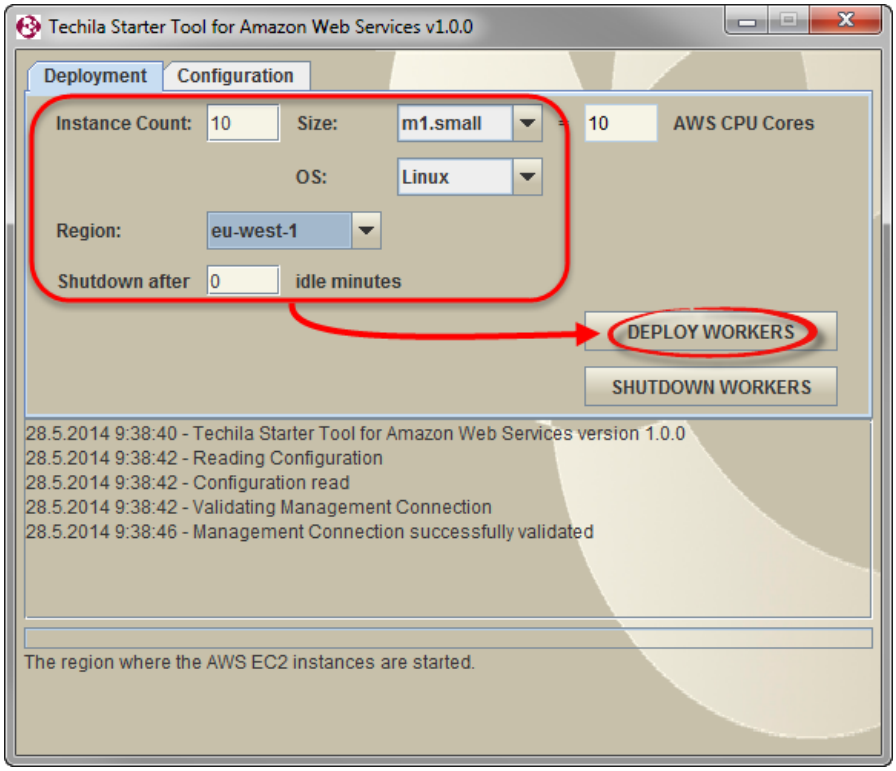


Figure 35. After specifying the desired number of instances and other parameters, clicking the "Deploy Workers" button can be used to start the deployment process.

5. After clicking the "Deploy Workers" button, all necessary TDCE related Amazon Web Services EC2 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 AWS console.

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

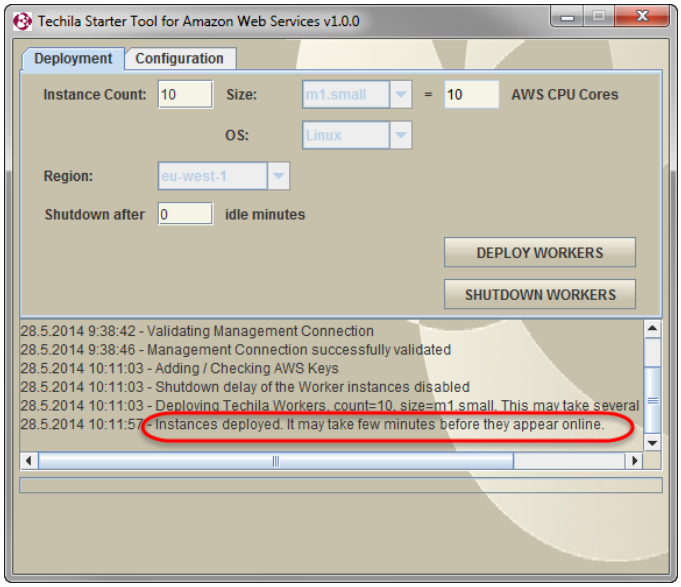
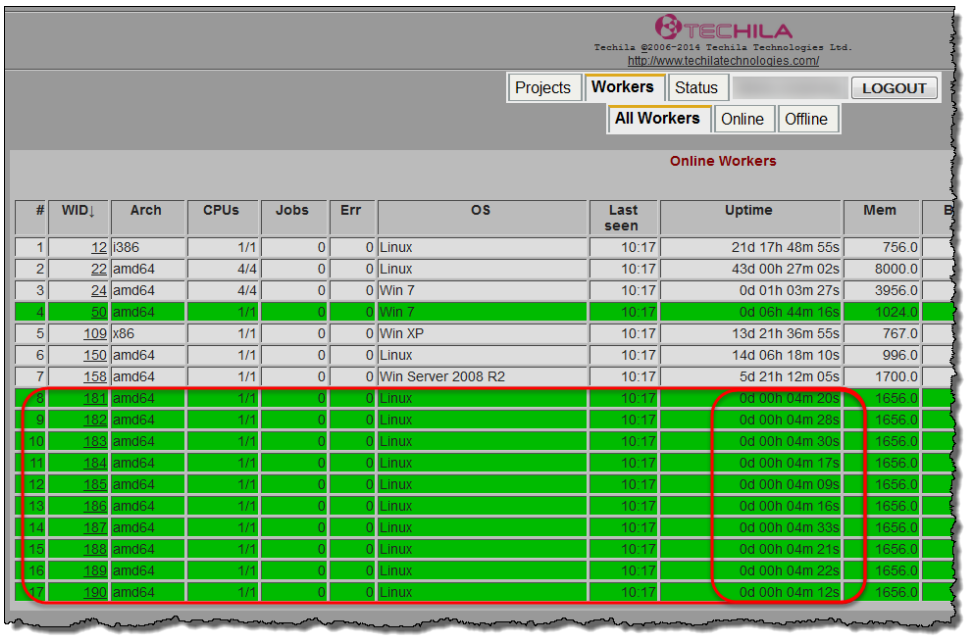


Figure 36. The "Instances deployed" message indicates that the deployment process has been successfully started.

After the instances have been deployed, the instances will be visible both in the AWS 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 End-User's view (i.e. when using a Techila Web Interface account without administrative rights).



#	WID	Arch	CPUs	Jobs	Err	OS	Last seen	Uptime	Mem
1	12	i386	1/1	0	0	Linux	10:17	21d 17h 48m 55s	756.0
2	22	amd64	4/4	0	0	Linux	10:17	43d 00h 27m 02s	8000.0
3	24	amd64	4/4	0	0	Win 7	10:17	0d 01h 03m 27s	3956.0
4	50	amd64	1/1	0	0	Win 7	10:17	0d 06h 44m 16s	1024.0
5	109	x86	1/1	0	0	Win XP	10:17	13d 21h 36m 55s	767.0
6	150	amd64	1/1	0	0	Linux	10:17	14d 06h 18m 10s	996.0
7	158	amd64	1/1	0	0	Win Server 2008 R2	10:17	5d 21h 12m 05s	1700.0
8	181	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 20s	1656.0
9	182	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 28s	1656.0
10	183	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 30s	1656.0
11	184	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 17s	1656.0
12	185	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 09s	1656.0
13	186	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 16s	1656.0
14	187	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 33s	1656.0
15	188	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 21s	1656.0
16	189	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 22s	1656.0
17	190	amd64	1/1	0	0	Linux	10:17	0d 00h 04m 12s	1656.0

Figure 37. Techila Workers deployed in Amazon EC2 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 AWS console.

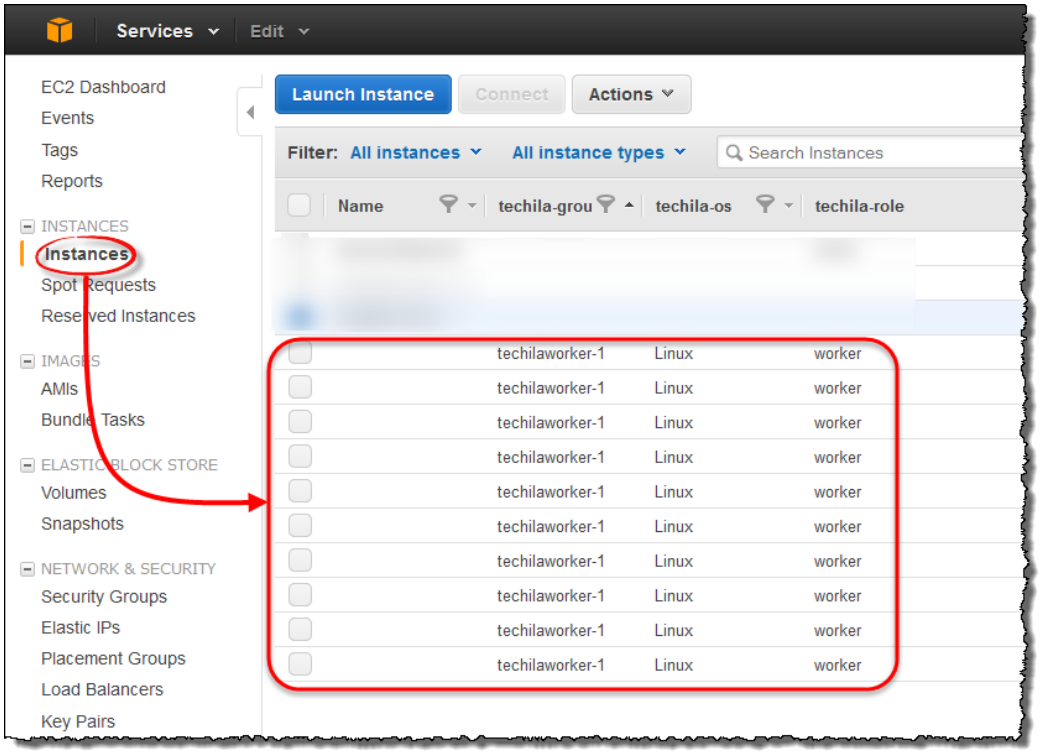


Figure 38. Instances hosting Techila Workers will be visible in the AWS console. This example displays 10 instances that were deployed in the previous example.

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 Amazon Web Services EC2

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 AWS 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.

   Note! If you have restarted the Techila Starter Tool after deploying Techila Workers, information on how many instances are currently deployed will **not** be displayed. In this situation, information on how many instances are currently deployed can be viewed from the AWS console.

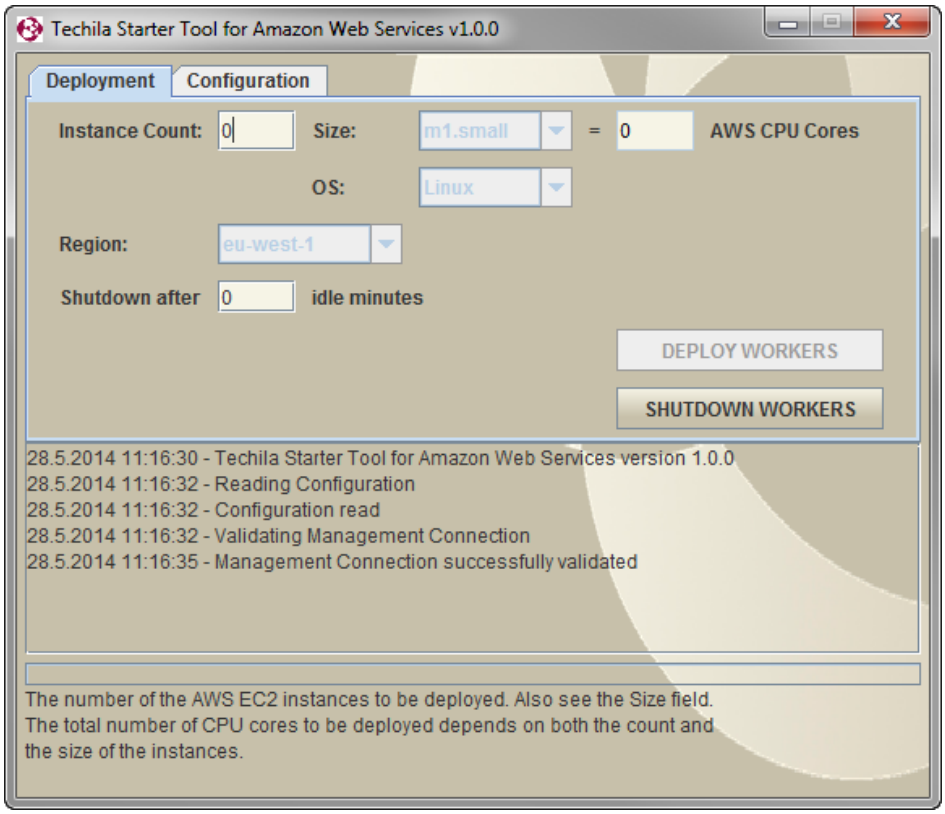


Figure 39. The view on the "Deployment" tab after restarting the Techila Starter Tool.

4. 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.

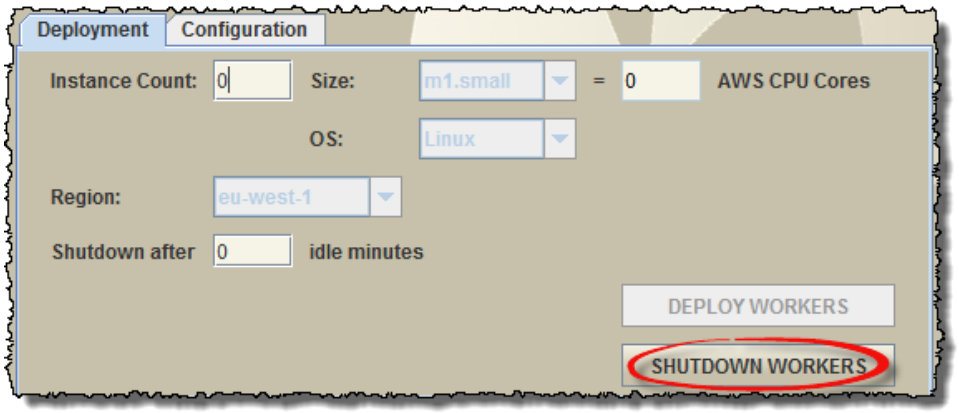


Figure 40. Clicking the "Shutdown Workers" button will remove all Techila Workers and delete all that were used to host Techila Workers.

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).

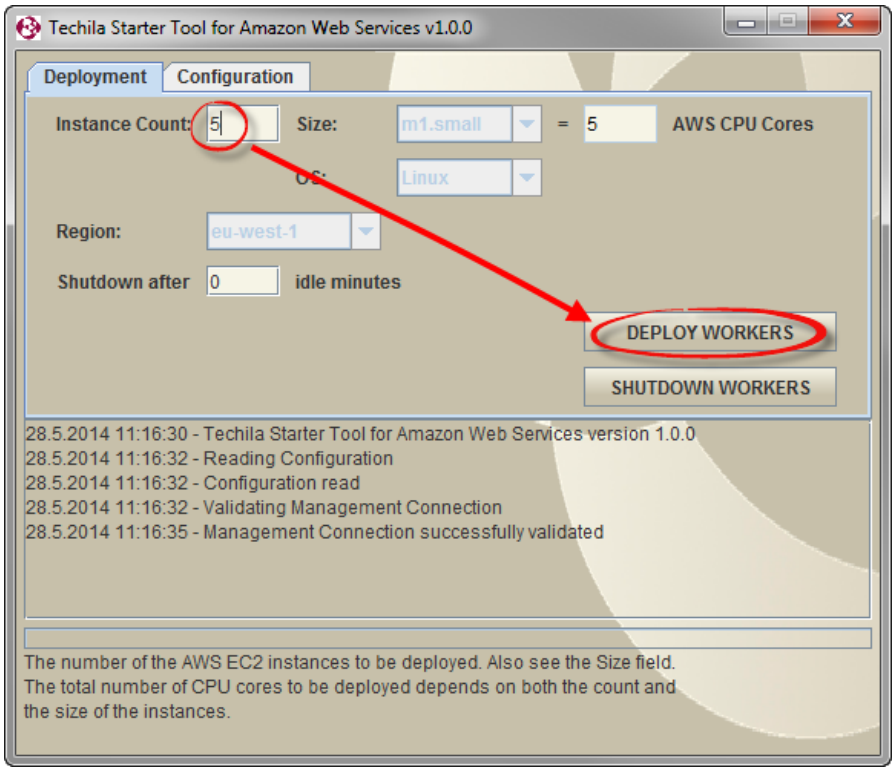


Figure 41. The "Instance count" field can be used to specify the desired instance count for the deployment.

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 AWS console.

Note! Always check that the instances were successfully terminated from the AWS console.

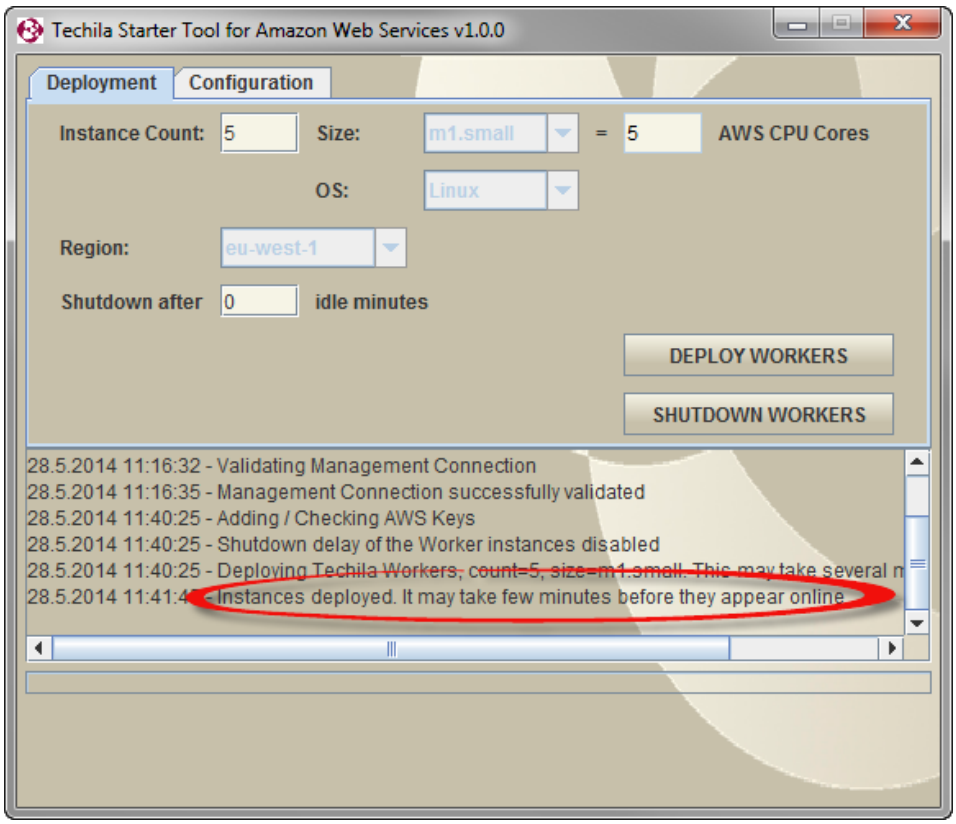


Figure 42. After updating the Techila Worker count, information will be displayed in the Techila Starter Tool message area.

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.

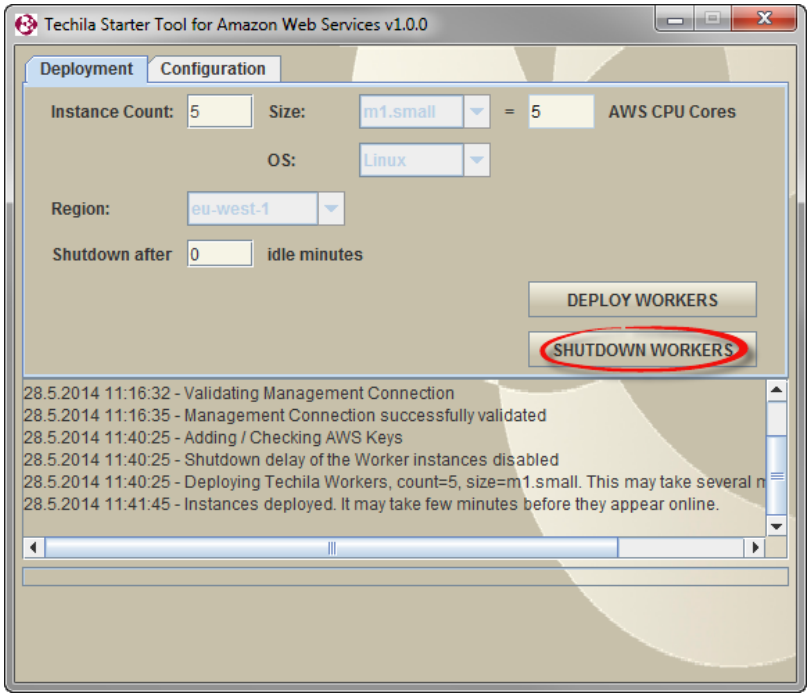


Figure 43. In this example, clicking the highlighted button terminate the remaining Amazon EC2 instances that are hosting the Techila Workers.

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 AWS console in order to verify the status of the instances.

   Click **OK** to open the AWS console in your web browser.

Figure 44. Open the AWS console to verify the status of the instances.

8. Click the **Sign in to the AWS console** button to sign in.

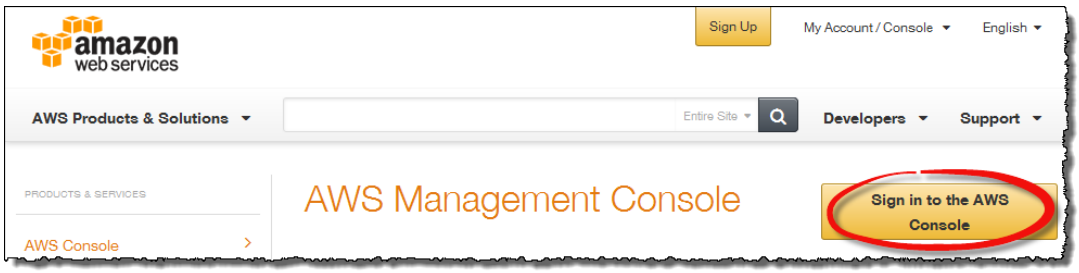


Figure 45. Navigate to the AWS console.

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

Figure 46. Sign in to the AWS console using your login credentials.

10. Click on **EC2**.

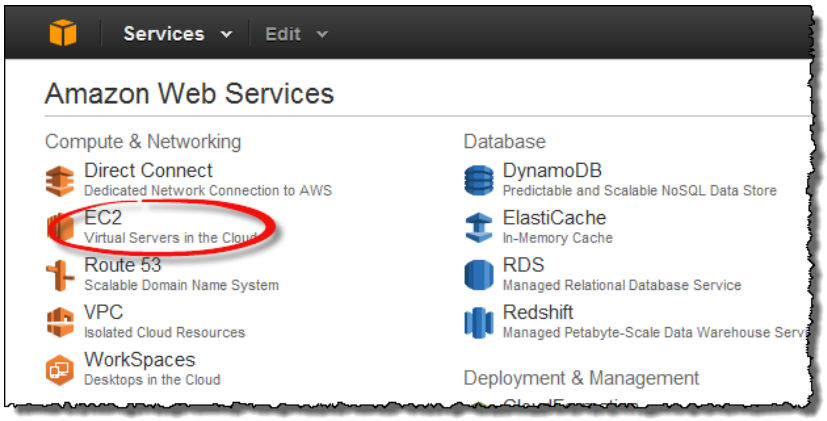


Figure 47. Navigate to the EC2 section.

11. Click on **Instances** and verify that all instances hosting Techila Workers have been terminated. The "Instance Status" value for terminated instances should be "terminated".

Note! If the instances were not terminated successfully, terminate the instances using the AWS console.

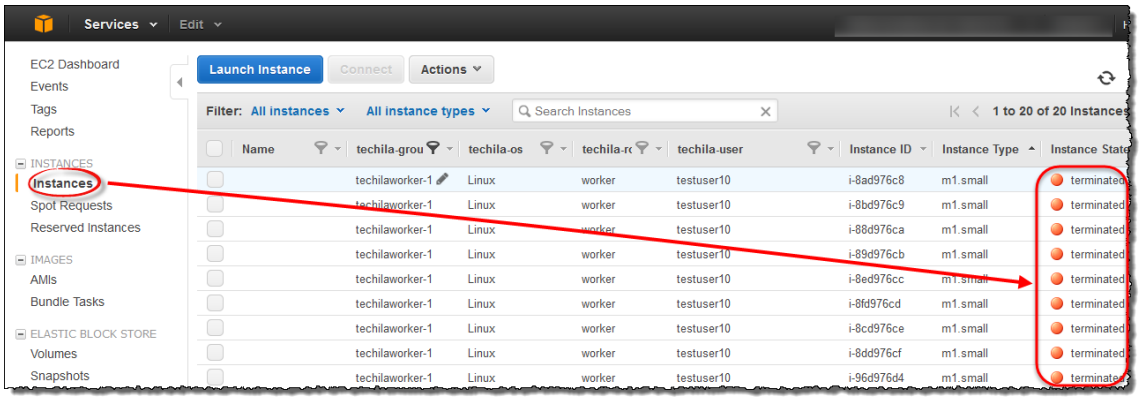


Figure 48. Successfully terminated instances will have value "terminated" in the "Instance Status" column.

6. Removing Techila Distributed Computing Engine Amazon Web Services EC2 Components

This Chapter contains instructions for removing all Techila Distributed Computing Engine (TDCE) related Amazon Web Services EC2 components that are created when using the Techila Starter Tool. 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 Amazon EC2 for deploying Techila Workers.

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.

4. Click the **Shutdown Workers** button to shut down all currently deployed Techila Workers.

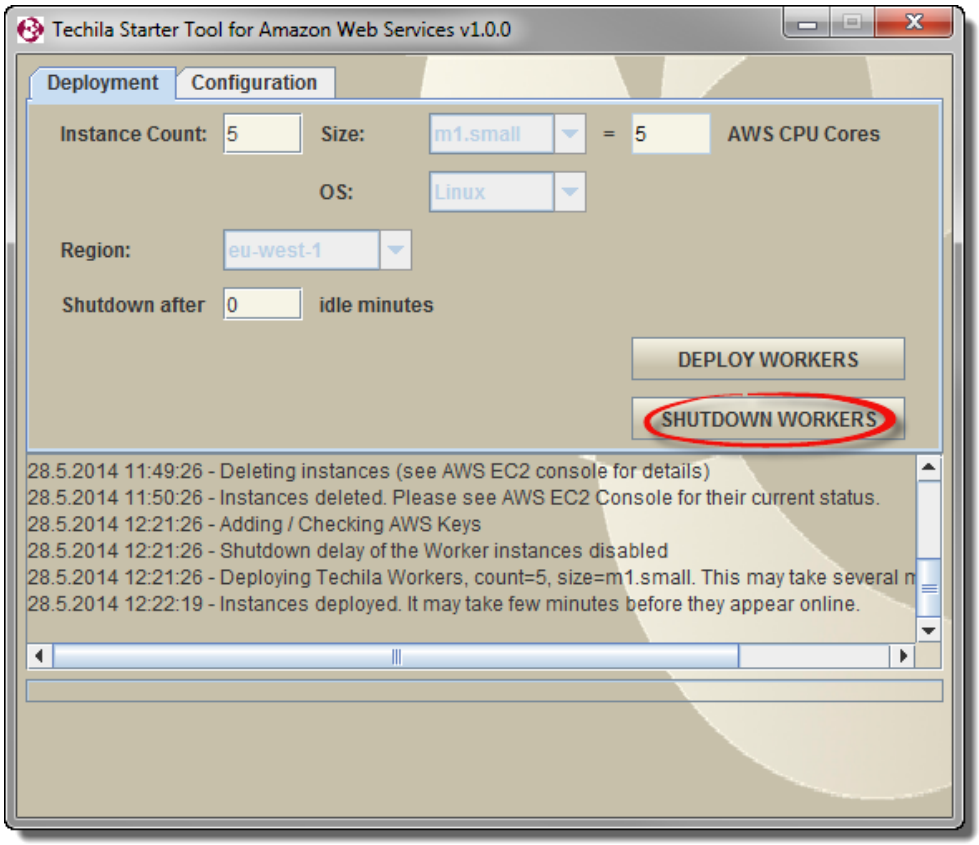


Figure 49. Clicking the highlighted button will remove all Techila Workers and terminate the instances that were hosting the Techila Workers.

5. After clicking the button, a popup window will be displayed, which can be used to open the AWS console. Click **OK** to open the AWS console in your web browser.

Figure 50. Open the AWS console.

6. Click the **Sign in to the AWS console** button to sign in.

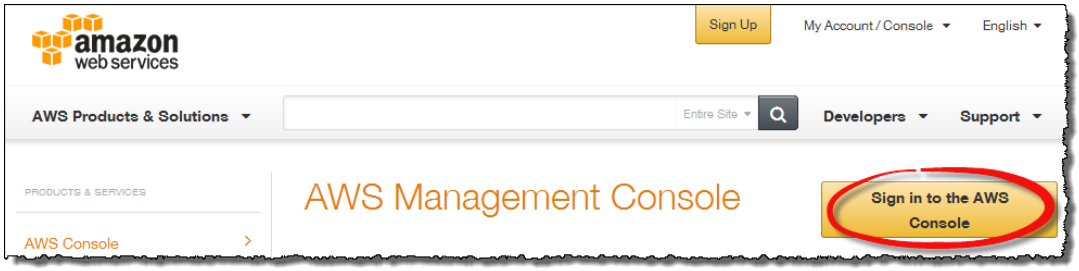


Figure 51. Navigate to the AWS console.

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

Figure 52. Sign in to the AWS console using your login credentials.

8. Click on **EC2**.

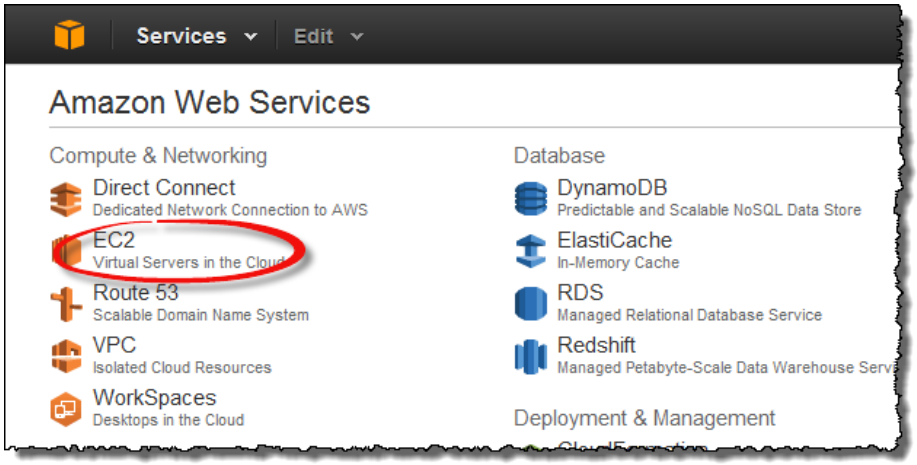


Figure 53. Navigate to the EC2 section.

9. Click on **Instances** and verify that all instances hosting Techila Workers have been terminated. The "Instance Status" value for terminated instances should be "terminated".

Note! If the instances were not terminated successfully, terminate the instances using the AWS console.

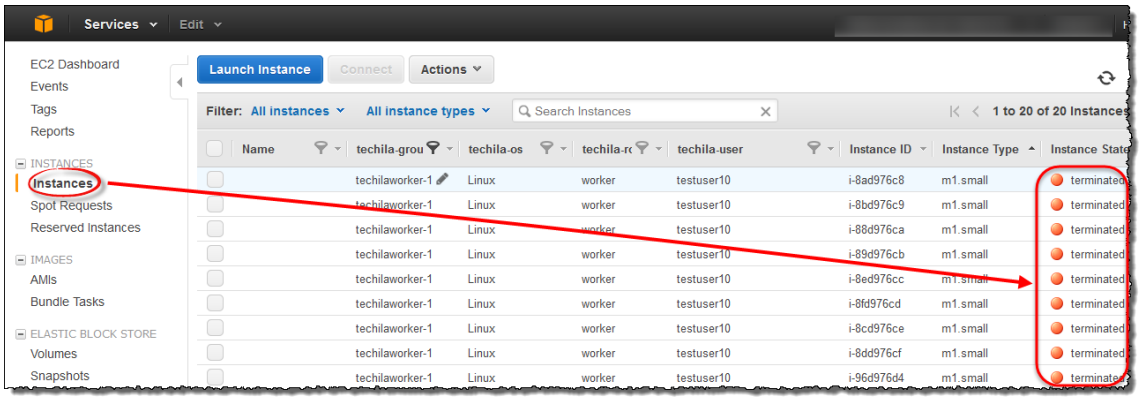


Figure 54. Successfully terminated instances will have value "terminated" in the "Instance Status" column.

10. Navigate to the console home and click on **IAM** under "Deployment & Management".

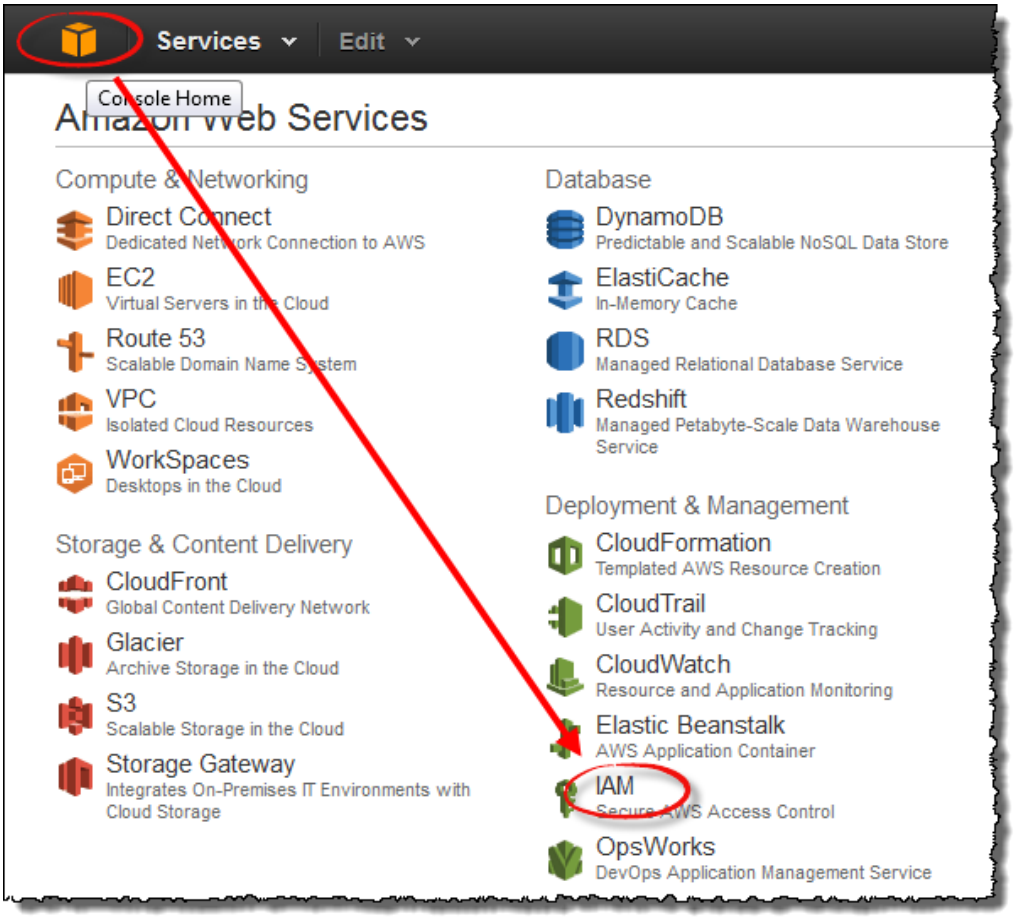


Figure 55. Navigate to the IAM section.

11. Click **Users** and select the User that you created when performing the configuration as described in Chapter 3.2. After selecting the user, click **User Actions** and select **Delete User**.

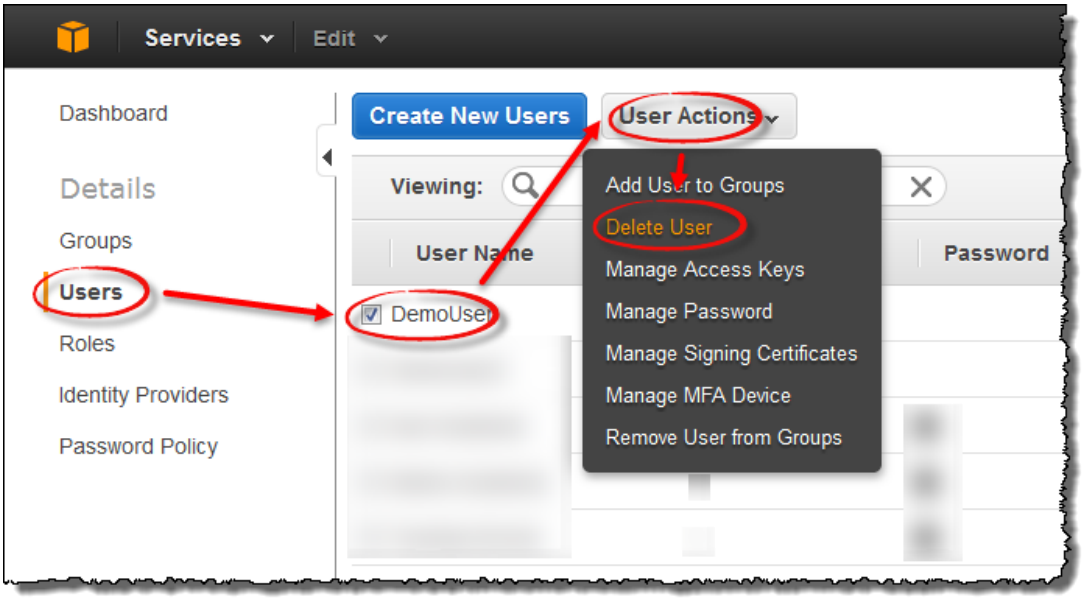


Figure 56. Delete the User.

12. If prompted, confirm the action. This will delete the User and any associated security credentials.

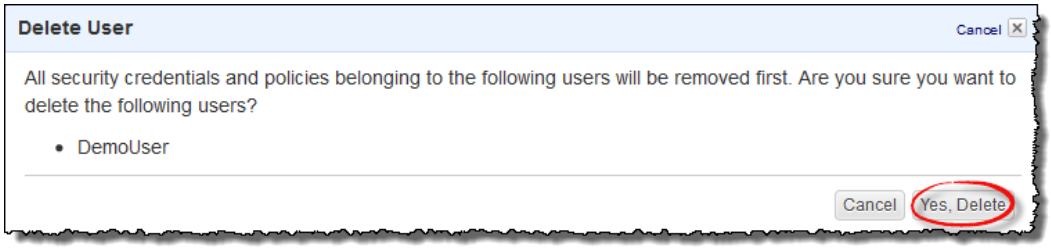


Figure 57. Confirming the action will also delete any associated security credentials and policies.

You have now successfully removed TDCE related Amazon Web Services EC2 components.

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

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

Figure 59. 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 Amazon EC2.

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

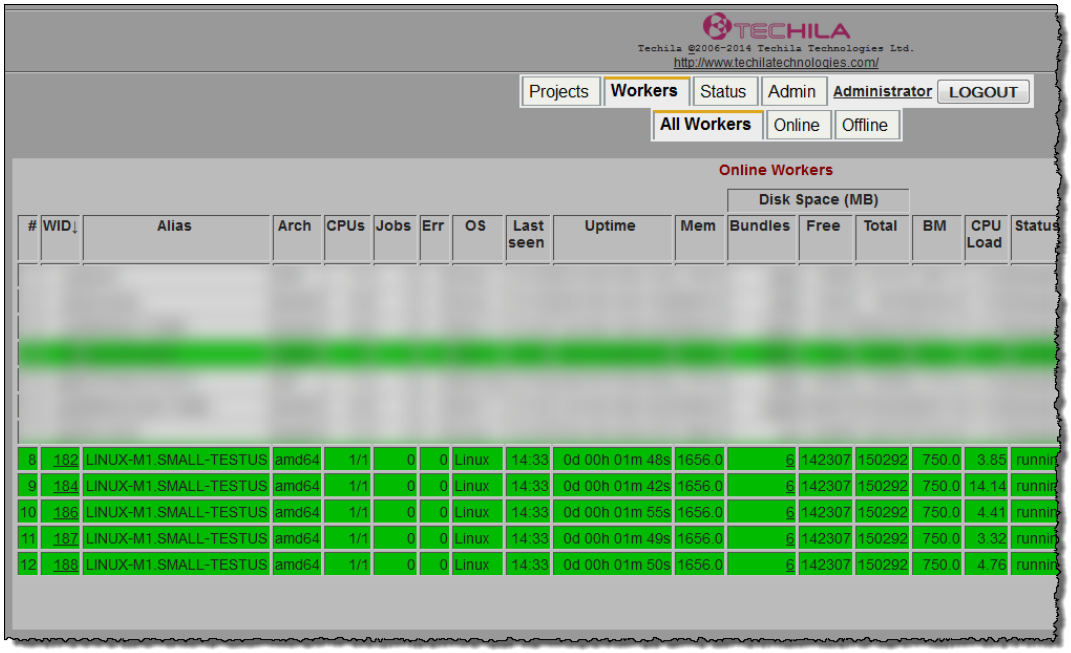


Figure 60. Administrative view of the "All Workers" page. The values in the "Alias" column for Amazon EC2 Techila Workers will include the instance type and operating system. In this example, there are five Techila Workers deployed on "m1-small" Amazon EC2 instances with a Linux based operating system.

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

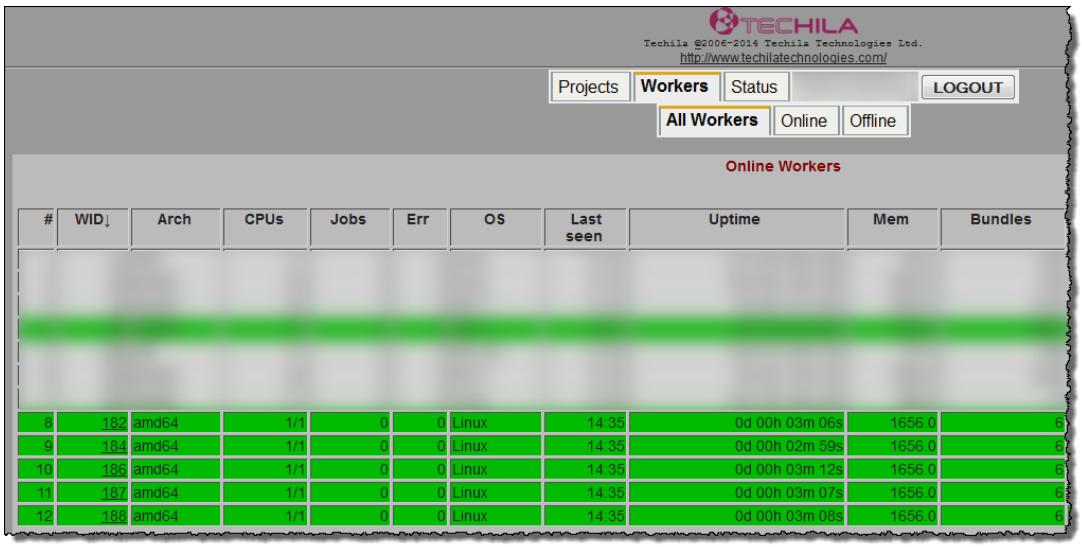


Figure 61. Normal view of the "All Workers" page. When logged in as a user without administrative rights, some of the columns (such as 'Alias') will not be displayed.

7.2. Viewing the Status of the Instances Using the AWS console

This Chapter contains instructions on how to view the status of currently deployed Amazon Web Services EC2 instances that are hosting the Techila Workers.

1. Using your web browser, login to the AWS console.

2. Click **EC2**.

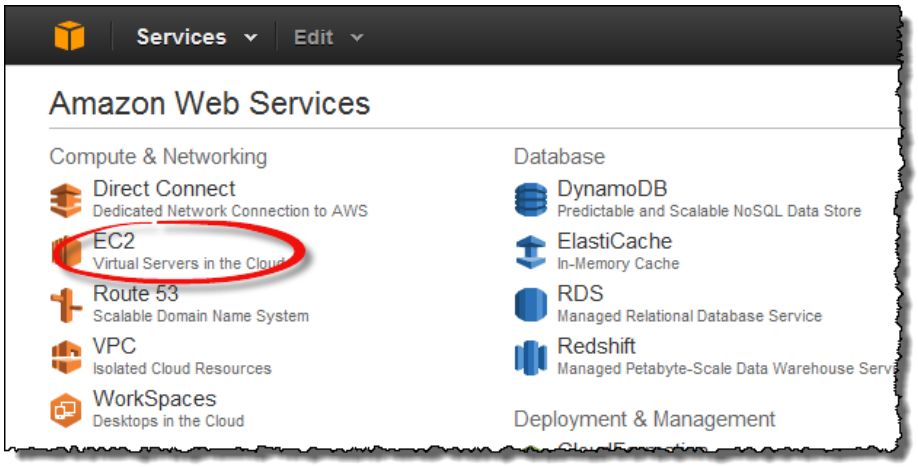


Figure 62. Navigate to the EC2 section.

3. In the EC2 section, click on **Instances**. This view will display all instances that have been deployed using the Techila Starter Tool.

   In the example below, 10 Techila Workers are deployed on "m1.small" instance types. The status of all instances in the example is "running", which is the typical status of Techila Workers that are able to process computational Jobs.

   More information on the lifecycle of EC2 instance can be found on the following website.

   http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instance-lifecycle.html

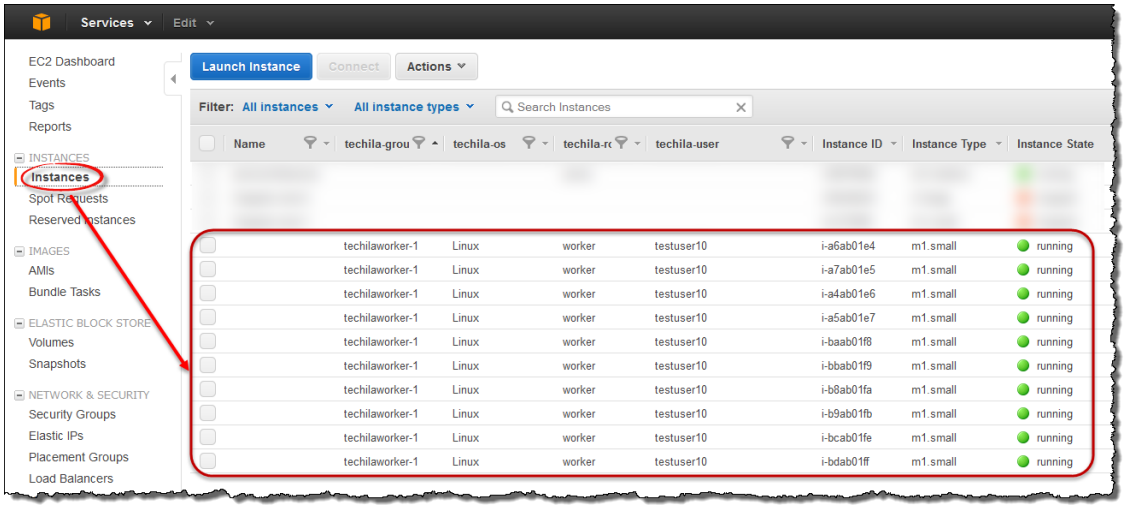


Figure 63. Status of the instances can be viewed in the "Instances" section.

7.3. Verifying That No 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 AWS console. The AWS console can be opened by clicking **OK** in the popup window displayed after clicking the "Shutdown Workers" button.

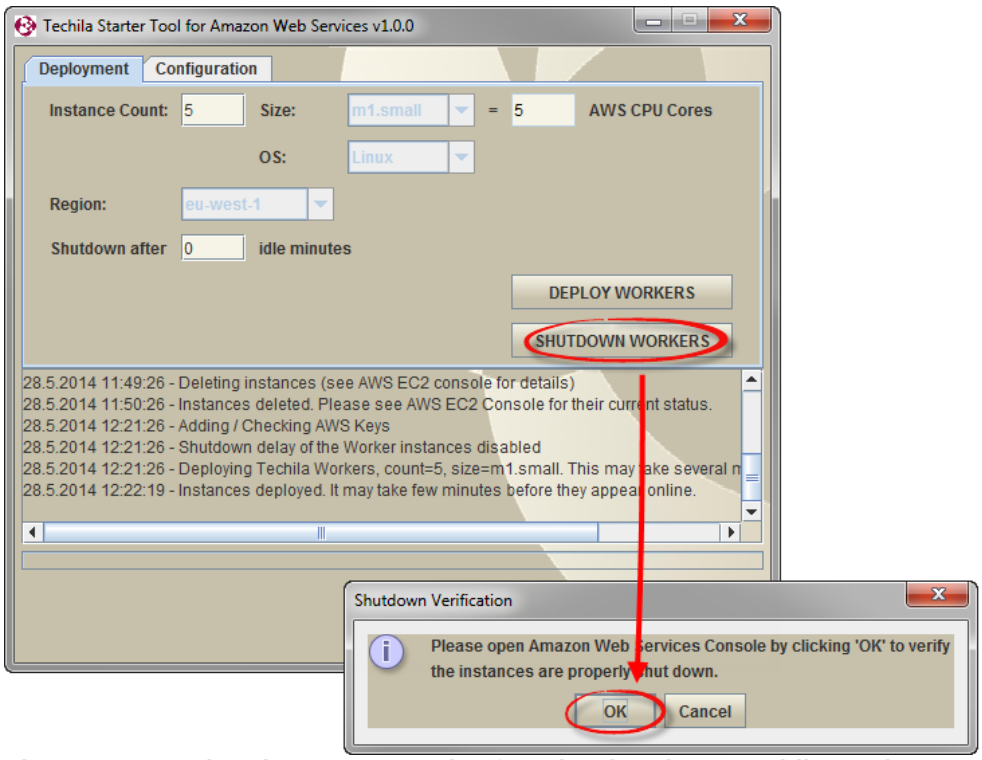


Figure 64. Opening the AWS console after shutting down Techila Workers.

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

2. Click the **Sign in to the AWS console** button to sign in.

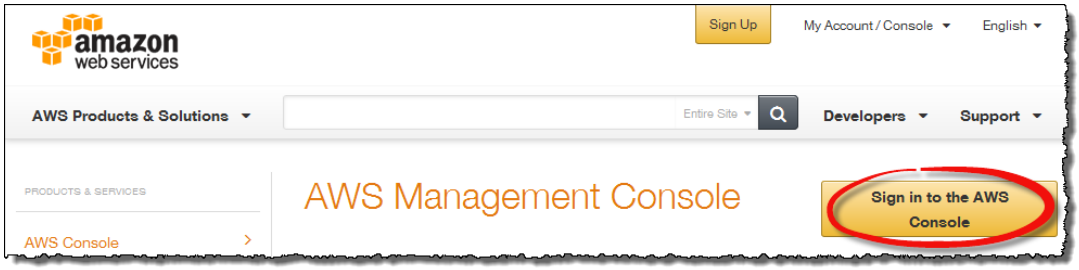


Figure 65. Select the cloud service to view more detailed information.

3. If required, sign in using your Amazon login credentials.

Figure 66. Sign in to the AWS console using your login credentials.

4. Click on **EC2**.

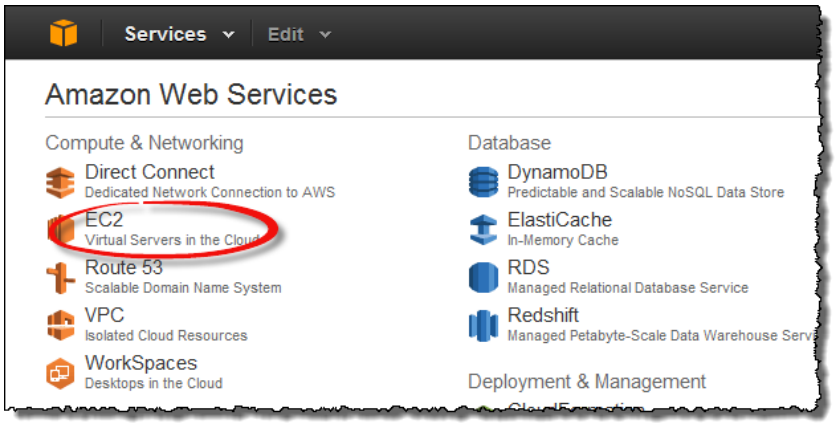


Figure 67. Navigate to the EC2 section.

5. Click on **Instances** and verify that all instances hosting Techila Workers have been terminated. The "Instance Status" value for terminated instances should be "terminated".

   Note! If the instances were not terminated successfully, terminate the instances using the AWS console.

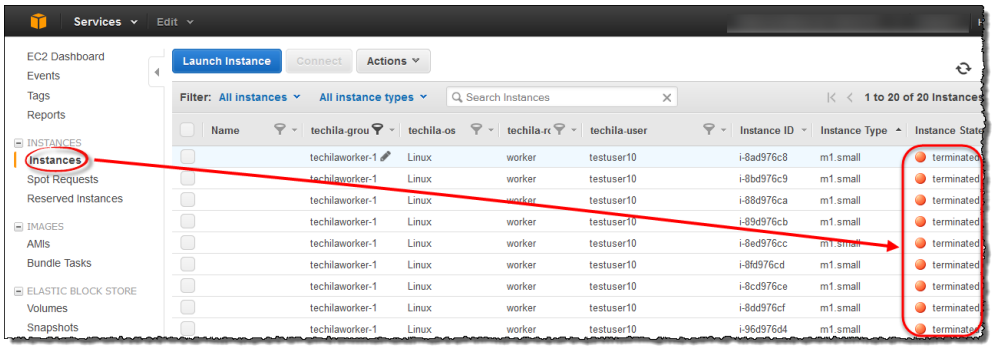


Figure 68. Successfully terminated instances will have value "terminated" in the "Instance Status" column.