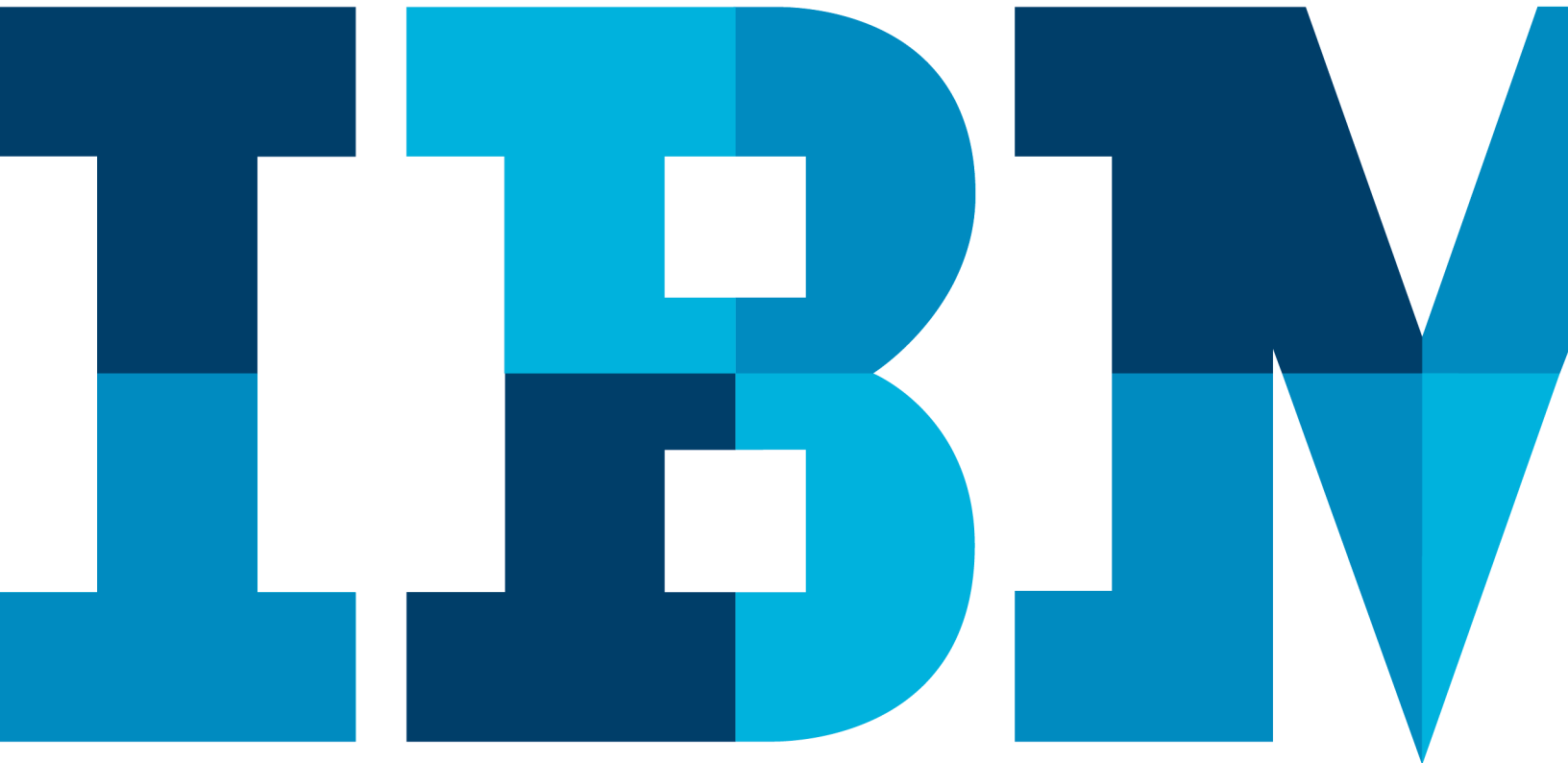


IBM Blockchain

Preparation for Lab



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1 Overview

This document describes the preparation step to run the Blockchain labs proposed by the IBM Blockchain Center of Competency of Montpellier (FRANCE)

There are several prerequisites to be fulfilled for the labs:

- An individual IBM Cloud account is required for each attendee in the session.
- A Kubernetes cluster deployed in the IBM Cloud, using the “Containers Services” free offering.
- A workstation running Linux, or Windows 10 with the Windows Subsystem for Linux.

The workstation requirements are:

- OS : MacOS 10.12 (minimum), Windows 10, Ubuntu Linux 14.04 (minimum) 64-bit
- 8GB of memory (some labs can be done with less memory, but 8GB is the recommendation)
- You user should have the Administrator rights

2 Preparing your lab workstation for the lab.

This section focuses on preparing your workstation for the lab.

The lab requires to have a Linux “like” environment. MacOS and Linux workstations have already a system compatible with Linux.

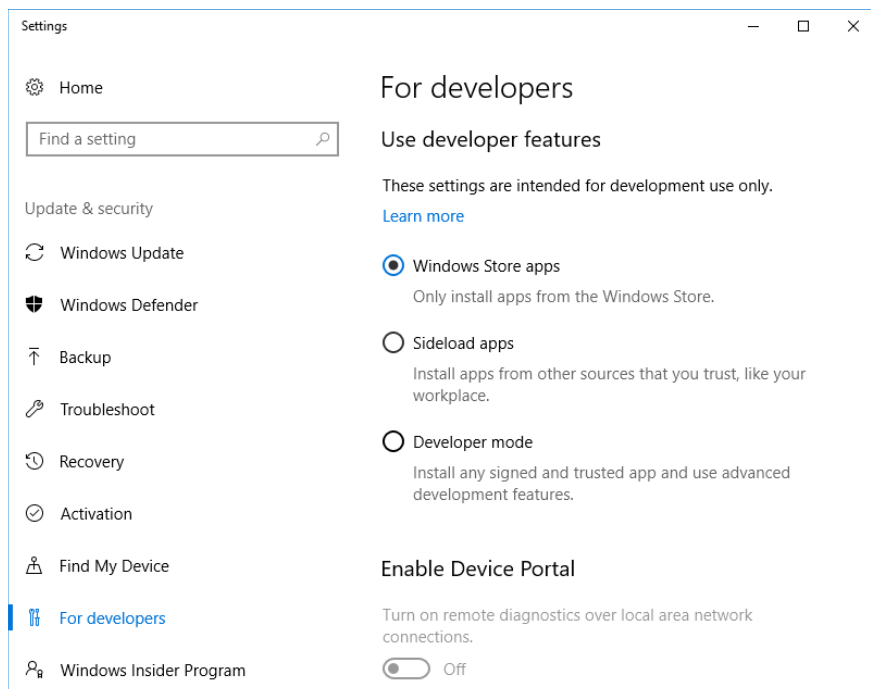
For the Windows 10 workstations, you have to install the Windows 10 Linux subsystem as described in this section.

2.1 Enable the Linux subsystem only for Windows 10 user

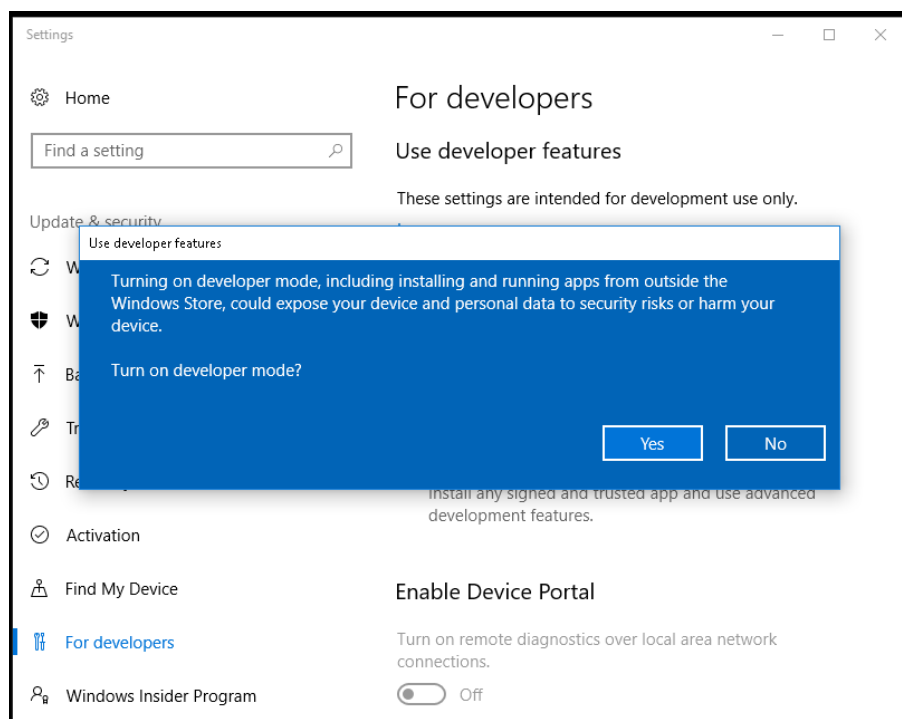
All commands in these hands-on labs will be issued in the Windows Linux subsystem. The following steps will allow you to install it on your PC.

2.1.1 Open the “Settings” panel and then search for the “For Developers” section,

2.1.2 Enable Developer Mode, as shown below:

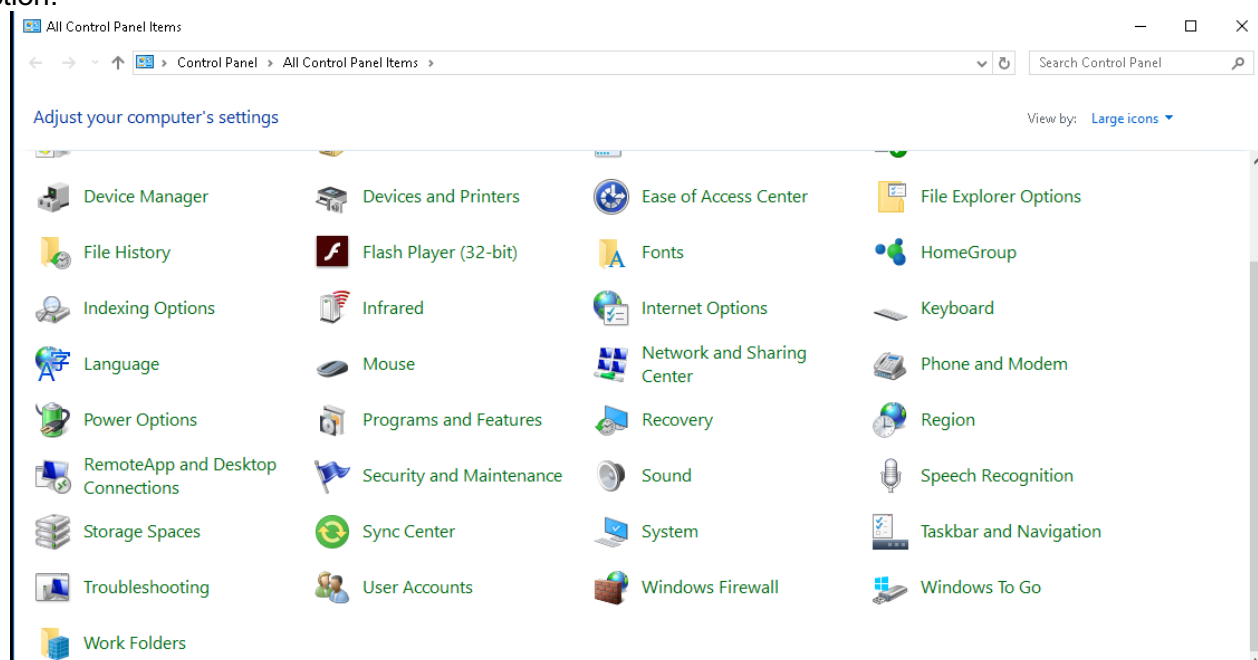


2.1.3 Once the selection is made, just click Yes on the popup window to proceed with the installation of the required Windows components, as shown below:

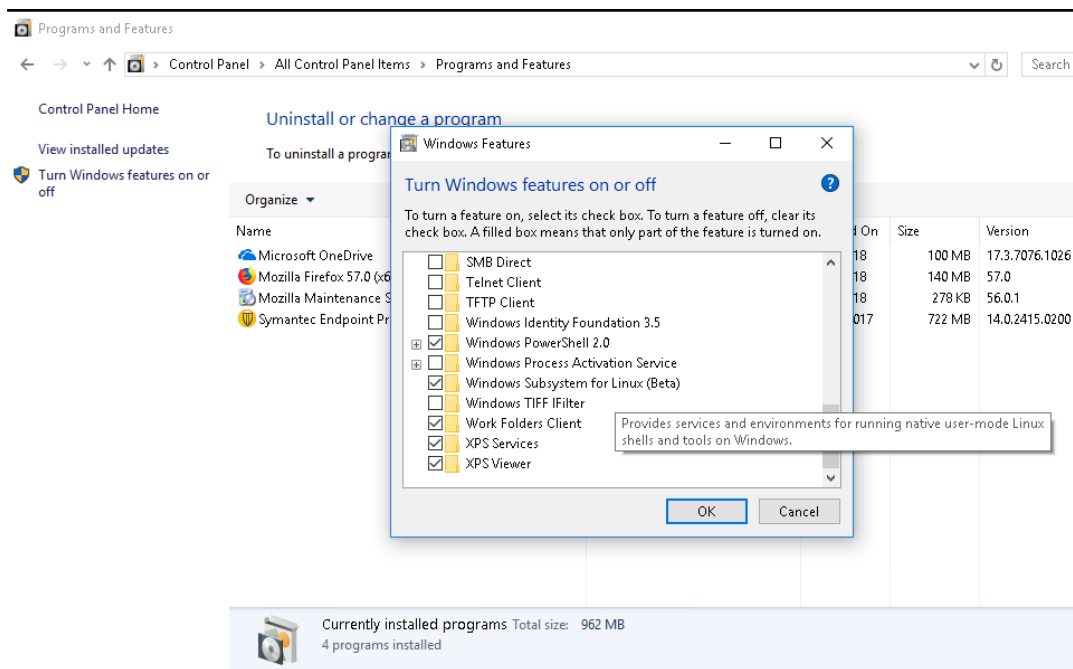


2.1.4 Activate the Windows Subsystem for Linux

Once Developer Mode is enabled, go to the Control Panel, then open the **“Programs and Features”** section:



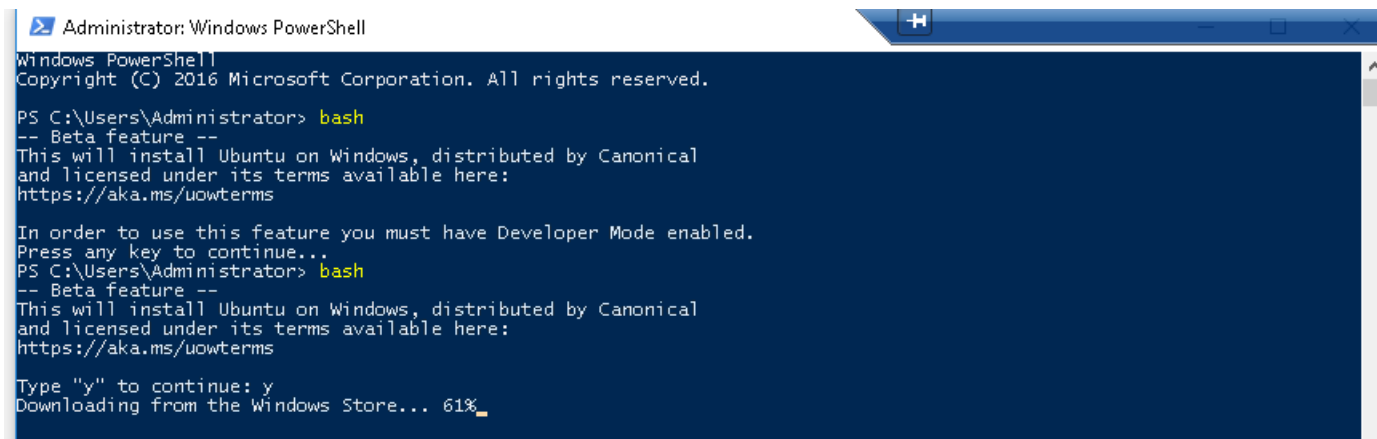
2.1.5 Then select **“Turn Windows features on or off”** in the left hand-side menu, to finally navigate down to the **“Windows Subsystem for Linux (beta)”** and select it.



Once installation is completed, agree to restart the machine.

2.2 Install Ubuntu Linux Subsystem on Windows10

2.2.1 Open a command prompt, and issue the “bash” command, as shown below:



```

Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> bash
-- Beta feature --
This will install Ubuntu on Windows, distributed by Canonical
and licensed under its terms available here:
https://aka.ms/uowterms

In order to use this feature you must have Developer Mode enabled.
Press any key to continue...
PS C:\Users\Administrator> bash
-- Beta feature --
This will install Ubuntu on Windows, distributed by Canonical
and licensed under its terms available here:
https://aka.ms/uowterms

Type "y" to continue: y
Downloading from the Windows Store... 61%

```

Then run the command :

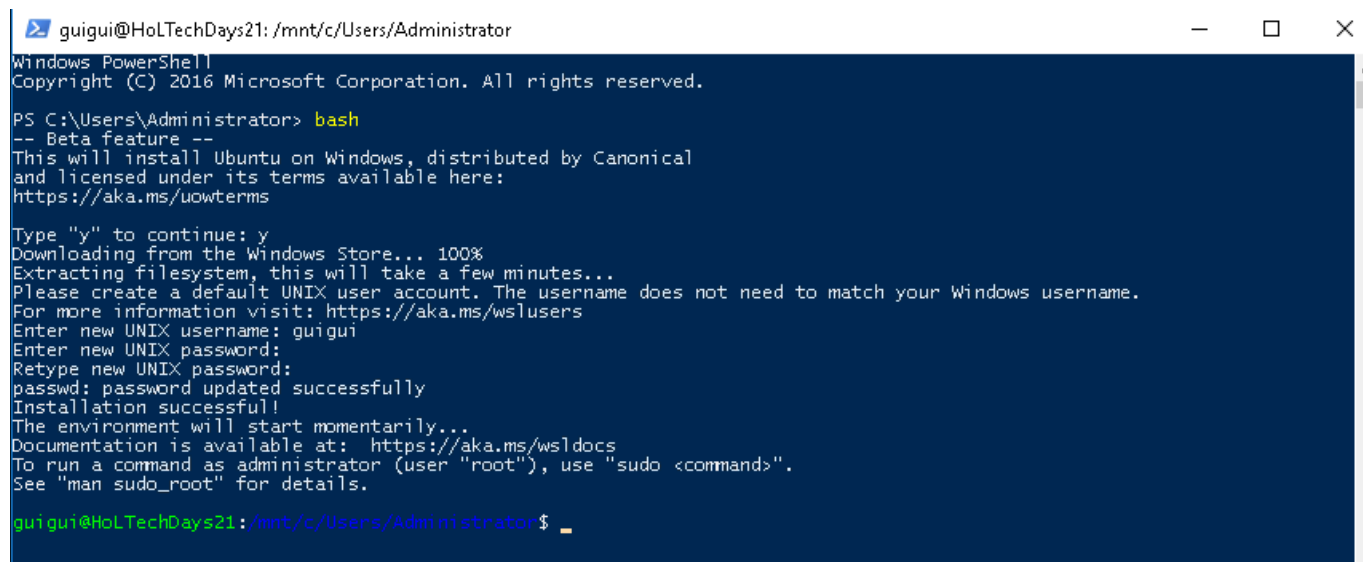
lxrun /install

You'll be prompted to install Ubuntu on Windows (the code will then be downloaded and installed).

2.2.2 When done, you will be prompted to create a user. Use the following credentials:

Username: **blockchain**

Password: **block4ever**



```

guigui@HoLTechDays21: /mnt/c/Users/Administrator
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> bash
-- Beta feature --
This will install Ubuntu on Windows, distributed by Canonical
and licensed under its terms available here:
https://aka.ms/uowterms

Type "y" to continue: y
Downloading from the Windows Store... 100%
Extracting filesystem, this will take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: guigui
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Installation successful!
The environment will start momentarily...
Documentation is available at: https://aka.ms/wsldocs
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

guigui@HoLTechDays21: /mnt/c/Users/Administrator$

```

3 Creating your IBM Cloud account

Go to the following link : <https://console.bluemix.net>

Then click on **Create a free account** and follow the creation procedure.

Pay attention that a confirmation email will be sent at the end of the account creation procedure. This email will provide the link to activate the account. If you don't receive this email, check in your spam folder in your email box.

4 Installing the IBM Cloud client and development tools

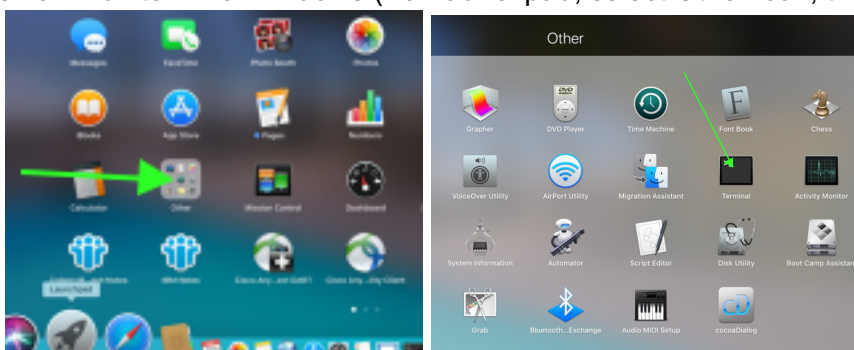
4.1 Install IBM Cloud client and dev tools

With this installation, you get the stand-alone IBM Cloud CLI, plus the following tools:

- Homebrew (Mac only)
- Git
- Docker
- Helm
- kubectl
- curl
- IBM Cloud Developer Tools plug-in
- IBM Cloud Functions plug-in
- IBM Cloud Container Registry plug-in
- IBM Cloud Kubernetes Service plug-in
- sdk-gen plug-in

4.1.1 On MacOS and Linux:

1. Open a Linux terminal windows (via Launchpad, select Other icon, then click on Terminal icon)



2. In the Linux terminal window, run the following command:

```
curl -sL https://ibm.biz/idt-installer | bash
```

4.1.2 On Windows 10

Open a command prompt, and issue the following command:

```
bash
```

Run the following command as an administrator:

```
Set-ExecutionPolicy Unrestricted; iex(New-Object  
Net.WebClient).DownloadString('http://ibm.biz/idt-win-installer')
```

4.1.3 Test the installation

Run the following command in a Linux terminal windows:

```
ibmcloud dev help
```

4.2 Install the IBM Cloud Container service

Run the following command in a Linux terminal window in order to display the list of available and installed plugins :

```
ibmcloud plugin repo-plugins -r Bluemix
```

Run the following command in order to install the container service

```
bx plugin install container-service -r bluemix
```

The result should be:

Plug-in '**container-service x.x.xxx**' was successfully installed into /Users/<user>/.bluemix/plugins/container-service. Use '**bx plugin show container-service**' to show its details.

4.3 Deploy the IBM Cloud Container Service

This chapter concerns both Windows 10 and MacOS users. They will operate through a Linux terminal window.

4.3.1 Select an IBM Cloud datacenter (regions)

Available production API endpoints can be retrieved by issuing the following command in a Linux terminal

```
ibmcloud regions
```

Select your IBM Cloud datacenter by issuing the following:

```
ibmcloud api https://api.eu-gb.bluemix.net
```

4.3.2 Login the IBM Cloud by issuing the following command:

```
ibmcloud login
```

Provide your IBM Cloud credentials

4.3.3 Create the cluster container service

PAY ATTENTION: This IBM Cloud service is for free but is only accessible if you have provided your credit card information in your IBM Cloud profile.

Use “blockchain” as cluster container name and issue the following command in the Linux subsystem to create your cluster:

```
ibmcloud cs cluster-create --name blockchain
```

You should see:

```
Creating cluster...
The machine-type flag was not specified. So a lite cluster with default
parameters will be created. To customize the parameters, create a standard
cluster and include all required flags.
OK
```

You can monitor progress using the **ibmcloud cs clusters** command

```
bx cs clusters
```

OK

Name	ID	State	Created	Workers	Datacenter	Version
blockchain	4a40[...]37d	deploying	8 minutes ago	1	mil01	
1.7.4_1506						

The state of the cluster goes from requesting to pending to deploying to normal.
The provisioning of the cluster requires about 10 to 45 minutes.

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