COUCHBASE NoSQL SUMMIT

Lab Handbook

Environment Setup: Prerequisite Steps

Legend - Please Read!

We use the following formatting conventions in all lab modules:

- Yellow highlighted values (in the text or on the screenshots) must be replaced with the correct value in your environment, e.g., 192.168.61.101
- Orange highlighted values are used for additional emphasis in the context of a task
- Commands in **`Courier New`** font in bold are what you are expected to execute (see below):
  - The "$" prefix indicates the command to be executed in the terminal on your local computer (Mac and Linux).
  - The ">" prefix is only used to indicate Windows-specific commands to be executed on your local computer. We will continue to refer to the Windows *Command Prompt* (*cmd.exe*) as "terminal" in all the labs, and all universal examples of commands will assume the Mac and/or Linux prefix, i.e. "$", and some commands may need to be modified before being run on Windows, e.g. change / to \, remove trailing & character to run commands in the background.
  - The text without any prefix is the output of the command.
  - The "#" prefix indicates a command that has to be run inside the shell of a pod. Commands in **`blue bold font`** are executed within the pod's shell.

```
$ python -V
Python 2.7.15
$ kubectl exec -it couchmart-6668949599-xhjph bash --namespace myuniquename
# cd /couchmart
Removing cb_status.pyc
Removing create_dataset.pyc
```

- Red font indicates important instructions, please pay very close attention to those.
- Items in **bold** or *italic* font are names or UI elements to pay attention to and/or click on.

Unless stated otherwise, all commands, parameters, settings, logins, passwords, etc. are case-sensitive!

The output of the commands in your terminal will likely differ from the output shown in the labs. Generally, this should not be an issue, as long as the output is similar, and there are no obvious error messages. Please ask for help if you get stuck.

Remember: copying and pasting the code and/or commands may produce errors due to auto-formatting in text editors, e.g. regular dash characters get replaced with extended ASCII dashes, regular quotation marks with fancy quotes; some special characters may be invisible. Such characters will not let your code run correctly. If this happens to you, try typing the commands instead of copying and pasting them.

Lab Setup

In this section, you will perform the necessary steps to install and configure the prerequisite tools required to perform the lab exercises for the Couchbase NoSQL Summit. Follow the steps below and reach out for help if you get stuck. You can skip any step if you already have the corresponding tool(s) installed on your computer.

Remember: it is important to have the right minimum versions of the tools. This guide focuses on installing the right versions, so you get the functionality needed to complete all steps successfully.

For Mac OS, it is recommended you install *Homebrew* package manager; it will make things much easier.

There are separate sections for Mac and Windows setup steps where needed. If there are no such separate sections, the steps are similar or identical for both operating systems, however terminal commands shown are based on Mac OS and some may need to be modified before being run on Windows, e.g. change / to \, remove trailing & character to run commands in the background.

This guide does not cover installation steps on Linux due to a variety of popular Linux distributions. Please ask for help if you are using Linux and get stuck.

Step 1: Install *Python 2.7.15* and *pip* Package Manager

We will use the *Python* programming language for automating some tasks in the labs. The installers are available from the following page: Python 2.7.15 Downloads. Python 3.x will also work if you already have that installed.

Mac - Option 1 - Homebrew

Use Homebrew to install *Python 2.7.15* and *pip* by issuing the following command in a terminal:

```
$ brew install python2
```

Mac - Option 2 - Installer

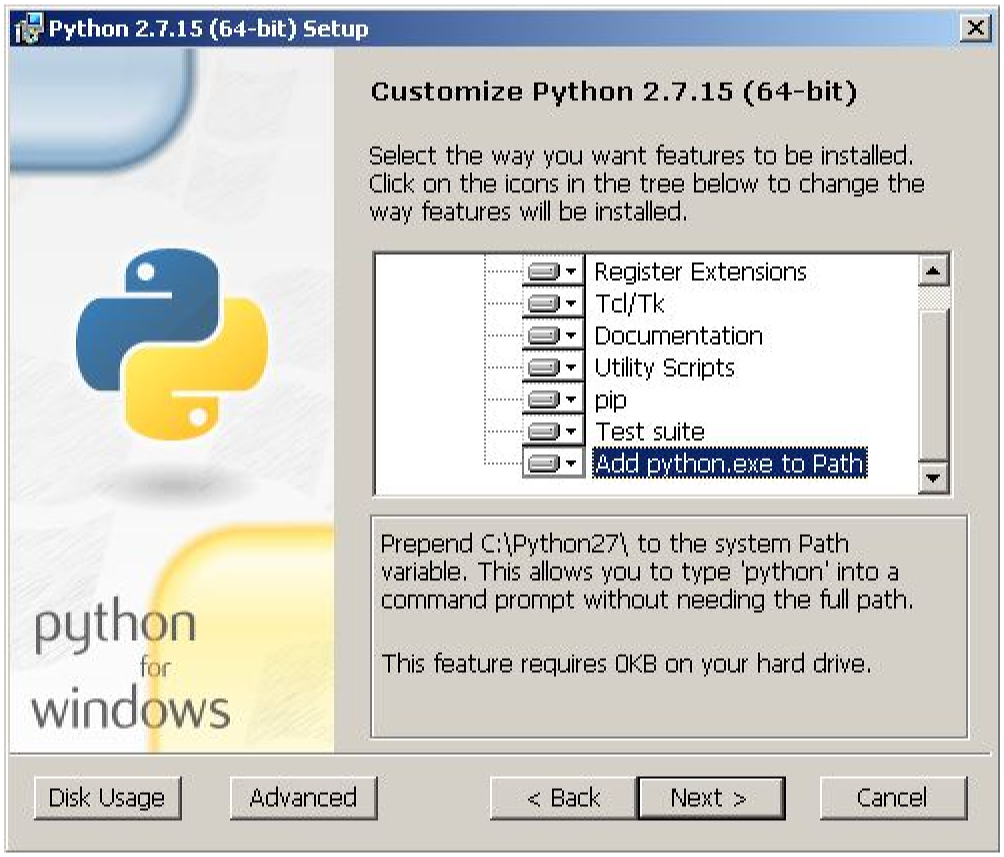
You can download and run the following installer: Python 2.7.15 MacOS installer. If you run the installer and accept all the defaults, it will install *pip* (Python package manager) too.

Check *Python* and *pip* versions in a terminal to make sure they successfully installed:

```
$ python -V
Python 2.7.15
$ pip -V
pip 18.1 from /usr/local/lib/python2.7/site-packages/pip (python 2.7)
```

Windows - Installer

Download and run the following installer: Python 2.7.15 Windows 64-bit installer. If you run the installer and accept all the defaults, it will install *pip* (Python package manager) too. You can also choose to add *python.exe* to your PATH environment variable as part of the installation (recommended):



Customize Python 2.7.15 (64-bit)

Select the way you want features to be installed. Click on the icons in the tree below to change the way features will be installed.

- Register Extensions
- Tcl/Tk
- Documentation
- Utility Scripts
- pip
- Test suite
- Add python.exe to Path

Prepend C:\Python27\ to the system Path variable. This allows you to type 'python' into a command prompt without needing the full path.

This feature requires 0KB on your hard drive.

Check *Python* and *pip* versions in a terminal to make sure they successfully installed:

```
> python -V
Python 2.7.15
> pip -V
pip 9.0.3 from c:\python27\lib\site-packages (python 2.7)
```

Step 2: Install *kubectl*

We will use *kubectl* (the Kubernetes command-line tool) to deploy and manage applications on Kubernetes. There are multiple options to download and install *kubectl* for your operating system, you can find them on the following page: Install and setup kubectl. Below are the recommended methods for Mac and Windows (please do only *one* of the 3 options provided for Windows).

Mac - Homebrew

Use Homebrew package manager to install *kubectl* by issuing the following command in a terminal:

```
$ brew install kubernetes-cli
```

Check *kubectl* version in a terminal to make sure it successfully installed:

```
$ kubectl version

Client Version: version.Info{Major:"1", Minor:"13", GitVersion:"v1.13.3",
GitCommit:"721bfa751924da8d1680787490c54b9179b1fed0", GitTreeState:"clean",
BuildDate:"2019-02-04T04:48:03Z", GoVersion:"go1.11.5", Compiler:"gc",
Platform:"darwin/amd64"}
The connection to the server localhost:8080 was refused - did you specify the
right host or port?
```

Windows - Option 1 - Download *kubectl.exe*

1. Download the *kubectl.exe* binary from here: kubectl 1.13.0 binary for Windows. Put the *kubectl.exe* file in any directory of your choice on your computer, e.g., *C:\kubectl*.

2. Modify/edit your PATH environment variable to include the path where you put *kubectl.exe*, e.g., *C:\kubectl*. Use the *Environment Variables* dialog box (*Control Panel → System → Advanced system settings → Environment Variables*) to change the PATH variable permanently or use the terminal as shown below to change the PATH variable for the duration of the session:

```
> set PATH=%PATH%;C:\kubectl
```

Windows - Option 2 - PowerShell Gallery

Use [PowerShell Gallery]() package manager. This works best on Windows 10, since `Install-PackageProvider` cmdlet has not been part of the OS prior to Windows 10.

Run Windows *PowerShell* as Administrator and execute the following commands:

```
> Set-ExecutionPolicy -ExecutionPolicy Unrestricted -Scope CurrentUser -Force
> Install-PackageProvider -Name NuGet -MinimumVersion 2.8.5.201 -Force
Name                           Version          Source           Summary
----                           --------         ------           -------
nuget                          2.8.5.208        https://onege... NuGet
provider for the OneGet meta-package manager
> Install-Script -Name install-kubectl -Scope CurrentUser -Force
> install-kubectl.ps1 -DownloadLocation C:\YOUR_PATH
==>Getting download link from
https://kubernetes.io/docs/tasks/tools/install-kubectl/
==>analyzing Downloadlink
==>starting Download from
https://storage.googleapis.com/kubernetes-release/release/v1.13.0/bin/windows/
amd64/kubectl.exe using Bitstransfer
==>starting 'C:\kubectl\kubectl.exe version'
Client Version: version.Info{Major:"1", Minor:"13", GitVersion:"v1.13.0",
GitCommit:"ddf47ac13c1a9483ea035a79cd7c10005ff21a6d", GitTreeState:"clean",
BuildDate:"2018-12-03T21:04:45Z", GoVersion:"go1.11.2", Compiler:"gc",
Platform:"windows/amd64"}
Unable to connect to the server: dial tcp [::1]:8080: connectex: No connection
could be made because the target machine actively refused it.

You can now start kubectl from C:\kubectl\kubectl.exe
```

Note: If you do not specify `-DownloadLocation` parameter, *kubectl.exe* will be installed in your temp directory.

Windows - Option 3 - Chocolatey

Using [Chocolatey]() package manager. This works well on Windows 7 and later versions.

Once you install *Chocolatey*, run Windows *PowerShell* as Administrator and execute the following commands:

```
> choco install kubernetes-cli
Chocolatey v0.10.11
Installing the following packages:
kubernetes-cli
By installing you accept licenses for the packages.
Progress: Downloading kubernetes-cli 1.13.3... 100%

kubernetes-cli v1.13.3 [Approved]
kubernetes-cli package files install completed. Performing other installation steps.
The package kubernetes-cli wants to run 'chocolateyInstall.ps1'.
Note: If you don't run this script, the installation will fail.
Note: To confirm automatically next time, use '-y' or consider:
choco feature enable -n allowGlobalConfirmation
```

```
Do you want to run the script?([Y]es/[N]o/[P]rint): Y

.....
 ShimGen has successfully created a shim for kubectl.exe
 The install of kubernetes-cli was successful.
  Software installed to 'C:\ProgramData\chocolatey\lib\kubernetes-cli\tools'

Chocolatey installed 1/1 packages.
 See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).

> cd $HOME
> mkdir .kube
Mode                LastWriteTime     Length Name
----                -------------     ------ ----
d----        02/04/2019   4:42 PM            .kube
> cd .kube
> New-Item config -type file
Mode                LastWriteTime     Length Name
----                -------------     ------ ----
-a---        02/04/2019   4:43 PM          0 config
```

Check *kubectl* version in a terminal to make sure it successfully installed:

```
> kubectl version

Client Version: version.Info{Major:"1", Minor:"13", GitVersion:"v1.13.0",
GitCommit:"ddf47ac13c1a9483ea035a79cd7c10005ff21a6d", GitTreeState:"clean",
BuildDate:"2018-12-03T21:04:45Z", GoVersion:"go1.11.2", Compiler:"gc",
Platform:"windows/amd64"}
Unable to connect to the server: dial tcp [::1]:8080: connectex: No connection
could be made because the target machine actively refused it.
```

Step 3: Install *aws-iam-authenticator* tool

The *aws-iam-authenticator* tool uses AWS Identity and Access Management (IAM) credentials to authenticate to a Kubernetes cluster.

Mac - Homebrew

Use Homebrew package manager to install *aws-iam-authenticator* by issuing the following command in a terminal:

```
$ brew install aws-iam-authenticator
```

Check *aws-iam-authenticator* help page in a terminal to make sure it successfully installed:

```
$ aws-iam-authenticator help
```

```
A tool to authenticate to Kubernetes using AWS IAM credentials

Usage:
  aws-iam-authenticator [command]

Available Commands:
  help        Help about any command
  init        Pre-generate certificate, private key, and kubeconfig files for
the server.
  server      Run a webhook validation server suitable that validates tokens
using AWS IAM
  token       Authenticate using AWS IAM and get token for Kubernetes
  verify      Verify a token for debugging purpose
  version     Version will output the current build information

Flags:
  -i, --cluster-id ID       Specify the cluster ID, a unique-per-cluster
identifier for your aws-iam-authenticator installation.
  -c, --config filename     Load configuration from filename
  -h, --help                help for aws-iam-authenticator
  -l, --log-format string   Specify log format to use when logging to stderr
[text or json] (default "text")

Use "aws-iam-authenticator [command] --help" for more information about a
command.
```

Windows - Download *aws-iam-authenticator.exe*

1. Download the *aws-iam-authenticator.exe* binary from here: aws-iam-authenticator 1.11.5 binary for Windows. Put the *aws-iam-authenticator.exe* file in any directory on your computer, e.g., *C:\aws .*

2. Modify/edit your PATH environment variable to include the path where you put *aws-iam-authenticator.exe*, e.g., *C:\aws*. Use the *Environment Variables* dialog box (*Control Panel → System → Advanced system settings → Environment Variables*) to change the PATH variable permanently or use the terminal as shown below to change the PATH variable for the duration of the session:

```
> set PATH=%PATH%;C:\aws
```

Check *aws-iam-authentication* help page in a terminal to make sure it successfully installed:

```
$ aws-iam-authenticator help

A tool to authenticate to Kubernetes using AWS IAM credentials

Usage:
  aws-iam-authenticator [command]

Available Commands:
  help        Help about any command
  init        Pre-generate certificate, private key, and kubeconfig files for
```

```
the server.
  server      Run a webhook validation server suitable that validates tokens
using AWS IAM
  token       Authenticate using AWS IAM and get token for Kubernetes
  verify      Verify a token for debugging purpose
  version     Version will output the current build information

Flags:
  -i, --cluster-id ID       Specify the cluster ID, a unique-per-cluster
identifier for your aws-iam-authenticator installation.
  -c, --config filename     Load configuration from filename
  -h, --help                help for aws-iam-authenticator
  -l, --log-format string   Specify log format to use when logging to stderr
[text or json] (default "text")

Use "aws-iam-authenticator [command] --help" for more information about a
command.
```

Step 4: Install *AWS CLI* (version 1.16.73 or greater)

AWS Command Line Interface (*CLI*) is a unified tool to manage all AWS services.

Mac - Homebrew

Use Homebrew package manager to install *awscli* by issuing the following command in a terminal:

```
$ brew install awscli
```

If *aws* is already installed, but the version is older than *1.16.73*, you need to upgrade to the latest version:

```
$ brew upgrade awscli
```

Check *aws* version in a terminal to make sure it successfully installed:

```
$ aws --version

aws-cli/1.16.78 Python/2.7.10 Darwin/18.0.0 botocore/1.12.68
```

Windows Installer

Download and run the following installer: AWS CLI Windows 64-bit installer.

Check *aws* version in a terminal to make sure it successfully installed:

```
> aws --version
```

```
aws-cli/1.16.159 Python/2.7.16 Windows/10 botocore/1.12.149
```

Step 5: Configure *AWS CLI*

We will configure *AWS CLI* credentials and options by running *aws configure* command. Use the following values for *AWS Access Key ID*, *AWS Secret Access Key*, *Default region name,* and *Default output format*:

AWS Access Key ID	**AKIAZX27XJVMPUGXAK7T**
AWS Secret Access Key	**W+woibWzxL3Osf9IP9SwQ27Vg43ma87SMADN65Cu**
Default region name	**eu-west-1**
Default output format	**json**

Run the *aws configure* command and **enter** each of the values provided above, as shown below:

```
$ aws configure

AWS Access Key ID [none]: AKIAZX27XJVMPUGXAK7T
AWS Secret Access Key [none]: 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
Default region name [none]: eu-west-1
Default output format [none]: json
```

Step 6: Install *git CLI*

git CLI is a tool to work with GitHub repositories.

Mac - *git* via Homebrew

git CLI is usually pre-installed on Mac. You can also install it by using Homebrew package manager:

```
$ brew install git
```

Windows - *git* via Installer

git CLI for Windows can be downloaded from the following location: Git for Windows. Here is the direct link for the current 64-bit installer: Git Windows 64-bit installer.