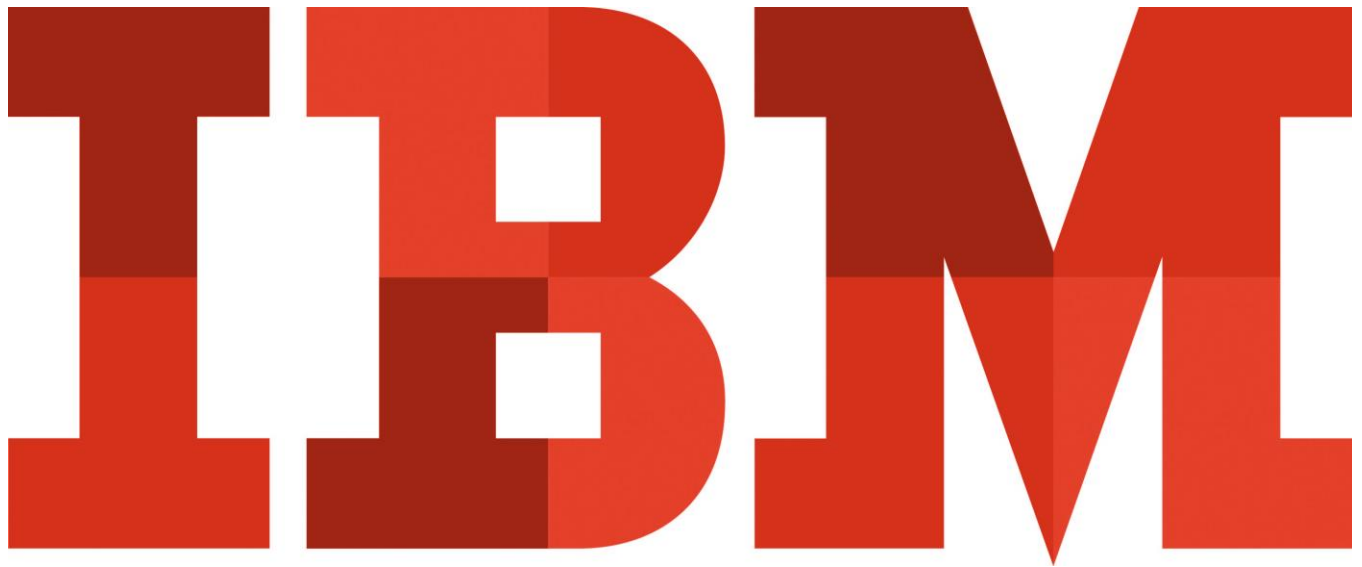


# Python, Watson and Cloudfant on IBM Bluemix for Hackathons

A guide for hackers

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A digital copy of this lab and code snippets can be found at:  
<http://ibm.biz/<<TODO>>>

## Quick Introduction

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When I attend Hackathons I am often asked if IBM Bluemix supports Python and how you can combine Python with Watson and other Services on the IBM Bluemix cloud. This little guide aims to provide a brief introduction to Python on Bluemix. Enjoy.



# Python Build pack on Bluemix

Bluemix comes with a Python build pack that is maintained by the open source community. , <https://console.ng.bluemix.net/catalog/starters/python/>  
The original buildpack is found at GitHub <https://github.com/cloudfoundry/python-buildpack>  
And is based on the Heroku Buildpack

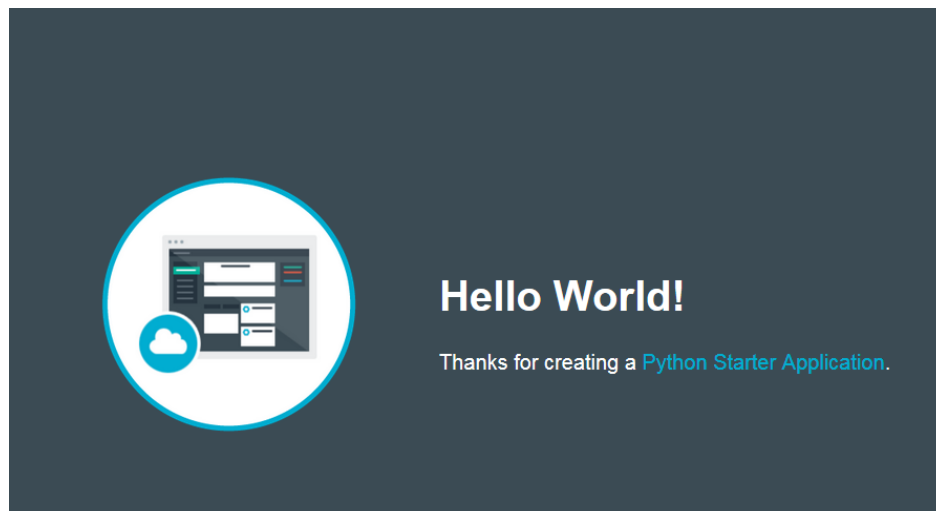
The screenshot shows the 'Create a Cloud Foundry Application' form for Python Flask. On the left, there's a sidebar with 'Python Flask' and 'Community' tabs, and a 'View Docs' link. Below that, it lists 'VERSION: 5.0', 'TYPE: Subdomain', and 'REGION: US South'. The main form has fields for 'App name' (with a placeholder 'Enter a unique name'), 'Host name' (with a placeholder 'Enter a unique name'), and 'Domain' (a dropdown menu showing 'mybluemix.net'). There's a 'Selected Plan' dropdown set to 'Default'. At the bottom, there's a circular icon with '-PY' and 'Python' below it.

To launch this buildpack, just fill in a unique App name and Host name and click on create. And then follow instructions.

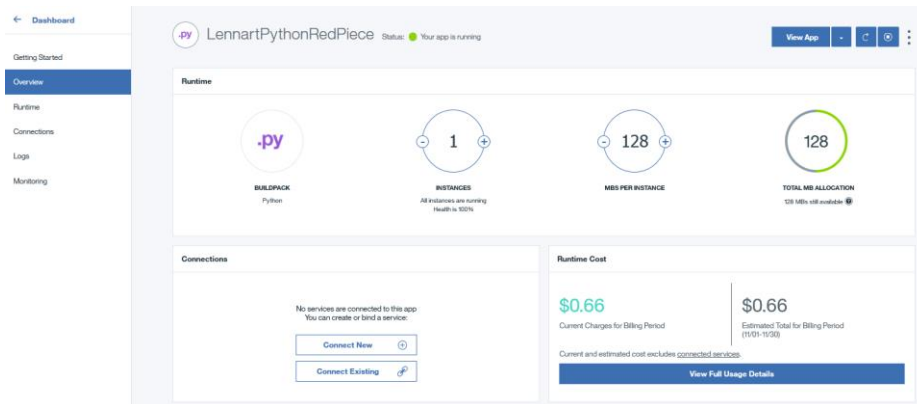
More about the Python buildpack on Bluemix at this URL:  
[https://console.ng.bluemix.net/docs/runtimes/python/index.html#python\\_runtime](https://console.ng.bluemix.net/docs/runtimes/python/index.html#python_runtime)

The screenshot shows the Python starter application page on Bluemix. On the left, there's a sidebar with 'Python' and 'Community' tabs, and a 'View Docs' link. Below that, it lists 'VERSION: 1.5.5', 'TYPE: Application', and 'REGION: US South'. The main form has fields for 'App name' (with a placeholder 'Enter a unique name'), 'Host name' (with a placeholder 'Enter a unique name'), and 'Domain' (a dropdown menu showing 'mybluemix.net'). Below the form, there's a 'Pricing Plans' section. It shows a table with columns 'PLAN', 'FEATURES', and 'PRICING'. The 'Default' plan is selected, with features 'Run one or more apps free for 30 days (375 GB-hours free, shared across Bring Your Buildpack and Community runtimes)' and pricing '\$0.07 USD/GB-Hour'. A note at the bottom says 'This is a service plan for the IBM Bluemix Platform runtime.' and there's a 'Terms' link.

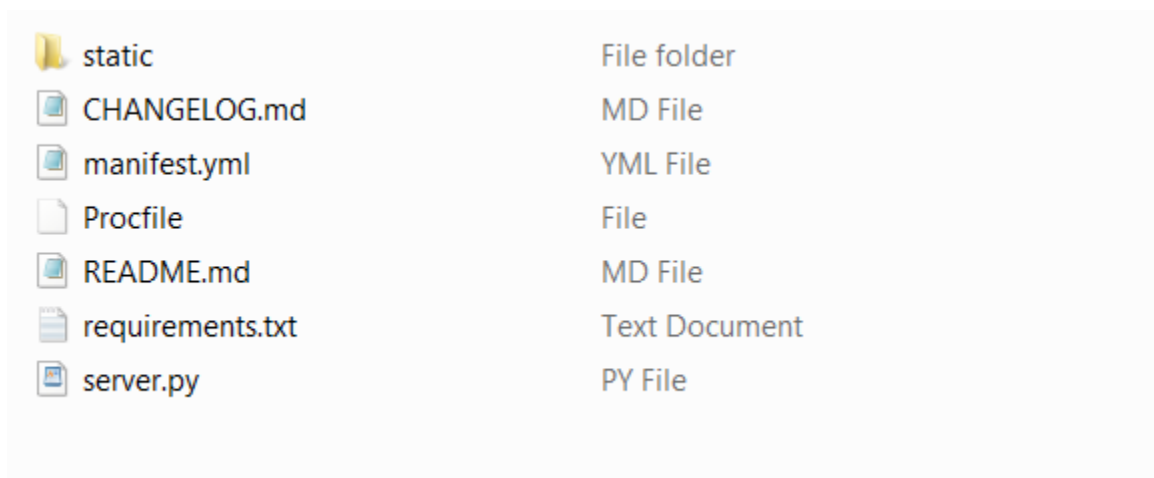
PLAN	FEATURES	PRICING
✓ Default	Run one or more apps free for 30 days (375 GB-hours free, shared across Bring Your Buildpack and Community runtimes).	\$0.07 USD/GB-Hour



When it launches, the Python Buildpack comes up with “Hello World”



When the Python Buildpack is launched it has a console window, from which you administer your installed runtime.



You usually develop on your laptop and then use the cf command to push the code up to Bluemix.

The screenshot shows the IBM Bluemix dashboard for a Python application named 'LennartPythonRedPiece' with the status 'Your app is starting'. The main content area features a section titled 'Deploying your app with the command line interface' with a sub-header 'Last updated: 5 October 2016 | [Edit In GitHub](#)'. Below this, there is a paragraph stating 'You can use the command line interface to deploy and modify applications and service instances.' followed by 'Before you begin, install the IBM® Bluemix® and Cloud Foundry command line interfaces.' Two blue buttons with download icons are provided: 'Download Bluemix Command Line Interface' and 'Download CF Command Line Interface'. A 'Restriction' note states: 'The command line tools are not supported by Cygwin. Use the tools in a command line window other than the Cygwin command line window.' Below this, a paragraph says 'After the command line interfaces are installed, you can get started:' followed by a numbered list item '1 Download your starter code, and extract the package to a new directory to set up your development environment.' and a blue button 'DOWNLOAD STARTER CODE' with a download icon.

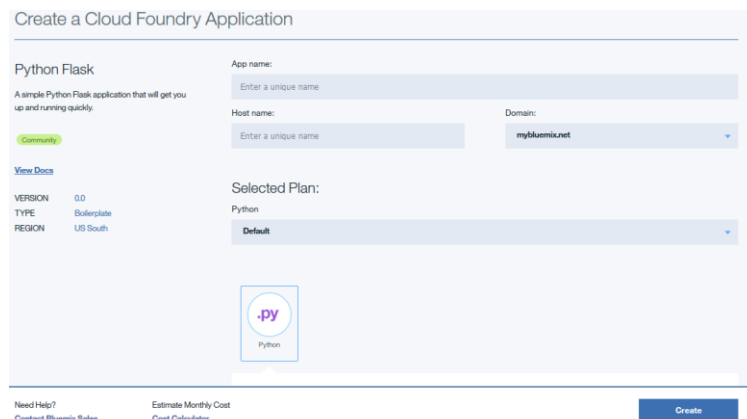
Just start by click on **DOWNLOAD STARTER CODE** and Download CF CommandLine Interface  
Then use the cf command to push your changes to Bluemix.

Documentation on the Python Runtime on Bluemix: [https://console.ng.bluemix.net/docs/runtimes/python/index.html#python\\_runtime](https://console.ng.bluemix.net/docs/runtimes/python/index.html#python_runtime)

## Python Flask on Bluemix

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The popular micro framework <http://flask.pocoo.org/> is hosted on Bluemix as a Boilerplate.  
<https://console.ng.bluemix.net/catalog/starters/python-flask/>



The screenshot shows the 'Create a Cloud Foundry Application' page for 'Python Flask'. On the left, there's a sidebar with 'Python Flask' title, a description 'A simple Python Flask application that will get you up and running quickly.', a 'Community' badge, 'View Docs' link, and a table with app details: VERSION 0.0, TYPE Boilerplate, and REGION US South. The main form area includes 'App name:' with a text input, 'Host name:' with a text input, and 'Domain:' with a dropdown menu showing 'mybluemix.net'. Below this is 'Selected Plan:' with a dropdown menu showing 'Python' and 'Default'. At the bottom, there's a '.py Python' icon. At the very bottom, there are links for 'Need Help? Contact Bluemix Sales', 'Estimate Monthly Cost Cost Calculator', and a 'Create' button.

## Python Flask and Cloudant

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Adding the Cloudant no-SQL database to Python Flask adds persistence to your app. Cloudant also provides <https://cloudant.com/product/cloudant-features/sync/> synchronization with disconnected mobile apps, a key feature in today's mobile world.

To get started, launch the Cloudant service on Bluemix.

[View All](#)

## Cloudant NoSQL DB

Cloudant NoSQL DB is a fully managed data layer designed for modern web and mobile applications that leverages a flexible JSON schema. Cloudant is built upon and compatible with Apache CouchDB and accessible through a secure HTTPS API, which scales as your application grows. Cloudant is ISO27001 and ISO27002 Type 1 certified, and all data is stored in triplicate across separate physical nodes in a cluster for HA/DR within a data center.

**IBM**

Connect to:

Leave unbound

[View Docs](#)

AUTHOR IBM  
PUBLISHED 10/15/2016  
TYPE Service  
LOCATION US South

Service name:  
Cloudant NoSQL DB-3a


Credential name:  
Credential-1

### Features

- Fully managed DBaaS**  
 Work with self-describing JSON documents through a RESTful API that makes every document in your Cloudant database accessible as JSON via a URL. Documents can be retrieved, stored, or deleted individually or in bulk and can also have files attached. IBM takes care of the provisioning, management, and scalability of the data store, freeing up your time to focus on your application.
- Powerful query, analytics, replication, and sync**  
 Cloudant indexing is flexible and powerful, and includes real-time MapReduce, Apache Lucene-based full-text search, advanced Geospatial, and declarative Cloudant Query. Cloudant makes it easy to conduct advanced analytics on JSON data with dataQD Warehousing and Apache Spark integrations. Replication enables cross-geo deployments and Cloudant Sync provides data access for mobile devices to run connected or off-line.

### Images

Click an image to enlarge and view screen captures, slides, or videos. Screen caps show the user interface for the service after it has been provisioned.



Need Help?  
[Contact Bluemix Sales](#)

Estimate Monthly Cost  
[Cost Calculator](#)

Create

When your Cloudant database has launched, you use the following code in Python to connect to your database:

Running Couchdb on your local laptop

Start your CouchDb from the services tab

[http://127.0.0.1:5984/\\_utils/#/database/test1/bf70258030d67578853a43fc01047d46](http://127.0.0.1:5984/_utils/#/database/test1/bf70258030d67578853a43fc01047d46)

# Using Python to access the Watson Developer Cloud

## Watson Developer Cloud, Python SDK

Watson Developer Cloud Python SDK

build failing codecov 58% pypi v0.22.0 downloads 1/month

Python client library to quickly get started with the various [Watson Developer Cloud](#) services.

<https://github.com/watson-developer-cloud/python-sdk>

Includes sample apps for most of the Watson services.

## Code Samples

<https://www.ibm.com/watson/developercloud/natural-language-classifier/api/v1/?python#explorer>

Replace YOUR SERVICE USERNAME and YOUR SERVICE PASSWORD with your credentials

```
from watson_developer_cloud import NaturalLanguageClassifierV1

natural_language_classifier = NaturalLanguageClassifierV1(
    username='YOUR SERVICE USERNAME',
    password='YOUR SERVICE PASSWORD')
```

```
import json
from watson_developer_cloud import NaturalLanguageClassifierV1

natural_language_classifier = NaturalLanguageClassifierV1(
    username='YOUR SERVICE USERNAME',
    password='YOUR SERVICE PASSWORD')

with open('../resources/weather_data_train.csv', 'rb') as training_data:
    classifier = natural_language_classifier.create(
        training_data=training_data,
        name='My Classifier',
        language='en'
    )
print(json.dumps(classifier, indent=2))
```

### Example response

```
{
  "classifier id": "10D41B-nlc-1",
  "name": "My Classifier",
  "language": "en",
  "created": "2015-05-28T18:01:57.393Z",
  "url": "https://gateway.watsonplatform.net/natural-language-
classifier/api/v1/classifiers/10D41B-nlc-1",
  "status": "Training",
  "status_description": "The classifier instance is in its training phase,
not yet ready to accept classify requests"
}
```

# Using Python and Cloudant

It is easy to add a No-SQL database to Python.

In the left hand panel of the Dashboard entry for your running Python buildpack, you click on Connections

The screenshot shows the IBM Cloud Dashboard for an application named "LennartPythonRedPiece". The status is "Your app is running". The left-hand navigation menu includes "Dashboard", "Getting Started", "Overview", "Runtime", "Connections" (highlighted with a red circle), "Logs", and "Monitoring". The main content area is divided into several sections:

- Runtime**: A summary section with four circular gauges:
  - BUILDPACK**: Python
  - INSTANCES**: 1 instance running, Health is 100%
  - MBs PER INSTANCE**: 128 MBs
  - TOTAL MB ALLOCATION**: 128 MBs, with 128 MBs still available
- Connections**: A section indicating "No services are connected to this app. You can create or bind a service." with buttons for "Connect New" and "Connect Existing".
- Runtime Cost**: A section showing current charges for the billing period as \$0.00 and an estimated total for the billing period (11/01-11/30) as \$0.00. A note states "Current and estimated cost excludes connected services." and a button for "View Full Usage Details".

## Articles on using Python on Bluemix

- Deploying a Python Web Application to IBM Bluemix:  
<https://www.ibm.com/blogs/bluemix/2016/03/deploying-python-app-to-bluemix/>
- Simple Hello World Python App using Flask  
<https://www.ibm.com/blogs/bluemix/2015/03/simple-hello-world-python-app-using-flask/>

## Resources

- Deploying a Python Web Application to IBM Bluemix:  
<https://www.ibm.com/blogs/bluemix/2016/03/deploying-python-app-to-bluemix/>
- Create a scalable and fault-tolerant REST endpoint using Flask and Python  
<https://www.ibm.com/developerworks/cloud/library/cl-scalable-fault-tolerant-rest-endpoint-flask-python-bluemix-trs/>

## Summing Up

The IBM Bluemix cloud offers several choices for mobile developers:

- 1) Templates for those who want to quickly want to create a mobile app with a Watson service with minimal coding,
- 2) A Mobile Services Boilerplate with embedded mobile services
- 3) An advanced mobile environment for enterprise-grade mobile development
- 4) SDKs for app development with Watson Services

The choice is yours, enjoy.

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