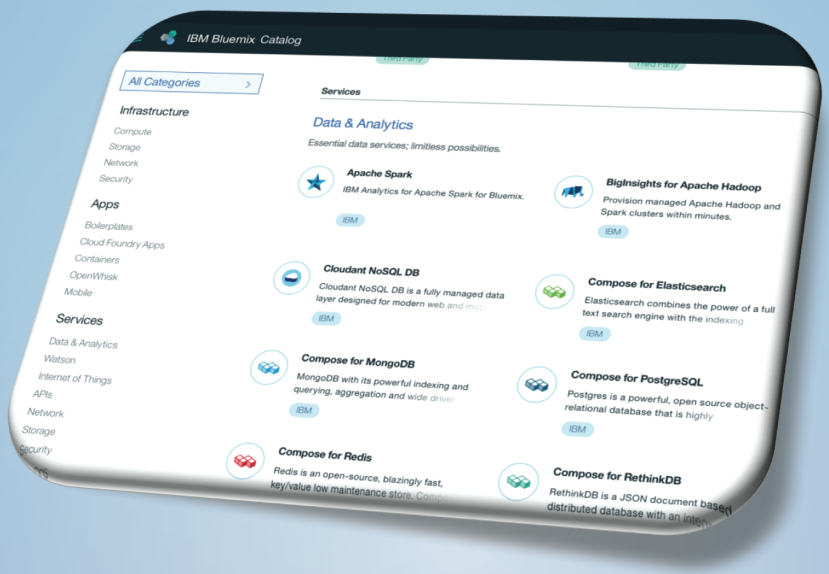
A Basic Guide To

IBM® Bluemix™



Learn to:

- ✔ Sign up for Bluemix and get an account
- ✔ Navigate Bluemix and the catalog
- ✔ Create & Deploy a simple app

Some words of wisdom

From Cognitive to DevOps to Databases and Compute, the world of business is adopting Cloud technologies at a pace faster than anyone expected……..we are living on the forefront and leading with Cloud……if you have not yet seen Bluemix, you are missing out…..

…..Bluemix is IBM's innovation platform

Disclaimer

This guide has been written by IBMers from the Cloud Platform Offering Management team.
It is intended as a guide to help you understand and navigate IBM Bluemix.

Author

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Steve Choquette - Editor

IBM Bluemix™

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Chapter One

Overview and Introduction

In this short chapter, we will explain how this document can help you understand and demonstrate the value of IBM Bluemix.

Bluemix is one of the most exciting things IBM has ever done. Onboarding more than 20,000 new users each day, and handling over a billion API calls per day, it is no wonder that IBM is the market leader in Hybrid Cloud. With 34+data centers globally and unrivalled industry expertise, IBM can better propel you on your digital innovation journey.

Bluemix is a fit for all your needs! Every customer is currently involved in a digital transformation of their enterprise. With Bluemix, you can take an idea from conception to a working application in the span of hours, days or weeks – rather than the extended time required by traditional IT approaches.

The IBM Bluemix cloud platform helps you solve real problems and drive business value with applications, infrastructure and services.

With Bluemix, you can

- Weave together the services, infrastructure and data to rapidly bring your ideas to production
- Manage and scale your business from day 1 to year 105
- Simplify the process of building systems that use data to understand, reason, and learn

Cloud resources make it possible to bring together multiple data sources, scale systems, and incorporate cognitive services to drive business value quickly and inexpensively. Integrate high-performance cloud infrastructure and cutting-edge services into your IT environment with the IBM Bluemix cloud platform. Rapidly create and deploy innovative, cloud-native applications.

Many users are currently using Bluemix to *create* new born-on-the-Cloud apps to better understand their customers and make more effective marketing decisions. Users are also using Bluemix to *connect* their existing legacy apps running on premises with mobile applications running in the cloud. Every single one of you has a need for Cloud services.

That is why this document is here - to help you showcase this amazing platform. As you know, nothing is more effective than to see the actual Bluemix platform in action. It's like trying to sell a new car from a glossy brochure versus driving up in a shiny new convertible with the top down.

Yes, you will create your own application and don't worry, you don't need any coding skills to complete this one. With a few clicks, you will have a running application and a great way to see the benefits and value of IBM Bluemix.

For reference, we have recording of a typical Bluemix demo.

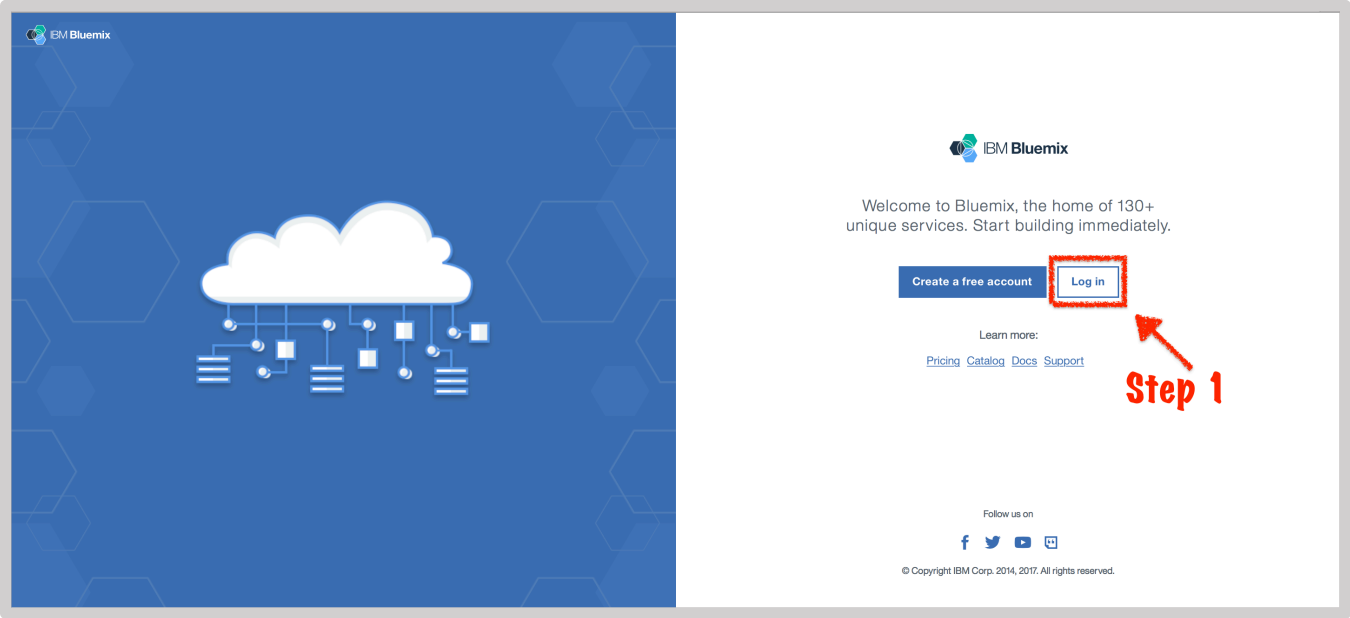
Scan the QR code

https://youtu.be/gq5MvY1nNOM

Or search YouTube for: Tour of Bluemix 2017

All pages will be outlined with screen shots, in addition to the video mentioned on the previous page.

Here is an example of the type of screen shot you will see throughout, to guide you (Fig 1.1)



(Fig 1.1)

Towards the back of this guide, there will be links to help you find the latest and greatest Bluemix materials, and also a way for you to extend your knowledge of Bluemix.

Before we continue, let's stop for a quick reminder of 'what is Bluemix'.

Bluemix is IBM's innovative cloud computing platform that combines Platform as a Service (PaaS) with Infrastructure as a Service (IaaS). Additionally, Bluemix has a rich catalog of cloud services that can be easily integrated with PaaS and IaaS to build business applications rapidly.

Bluemix has cloud deployments that fit your needs, whether you are a small business that plans to scale, or a large enterprise that requires additional isolation. You can develop in the cloud without borders, connecting your private services to the public Bluemix services available from IBM. You and your team can access the apps, services, and infrastructure in Bluemix and use existing data, systems, processes, PaaS tools, and IaaS tools. Developers can tap into the rapidly growing ecosystem of available services and runtime frameworks to build applications using polyglot programming approaches.

With Bluemix, you no longer have to make large investments in hardware to test or run a new app. Instead, we manage it all for you and only charge for what you use. Bluemix provides Public, Dedicated, and Local deployment models.

With Bluemix, you can take an idea from inception, to development sandbox, to a globally distributed production environment with compute and storage infrastructure, open source platform services and containers, and software services and tools from Watson, and more. Beyond the capabilities of the platform itself, IBM Bluemix also provides flexible deployments. Provision IBM Bluemix resources on-premises, in dedicated private cloud environments, or in the public cloud, and manage the resources for all three types of environments from a single dashboard.

All IBM cloud resources that are deployed in Bluemix Public and Dedicated environments are hosted from your choice of 34+ IBM Cloud Data Center locations around the world. IBM Cloud Data Centers provide regional redundancy, a global network backbone connecting all data centers and points of presence, and stringent security controls and reporting. With IBM Cloud Data Centers, IBM can meet your most demanding expansion, security, compliance, and data residency needs.

IBM enables you to:

- Deploy a high performance compute and storage infrastructure in secure IBM Cloud Data Centers around the world.
- Test and adopt a broad range of cloud services and capabilities from IBM, open source communities, and third-party developers.
- Connect to all of your legacy systems and apps from a single, scalable, cloud platform through private network and API capabilities.
- Spin up and turn down resources in real time as your business needs or workload demands change.

A lot of this information was taken from the Docs, on www.bluemix.net. It is a fantastic resource for finding more information about Bluemix, understanding a Bluemix service in more depth, accessing quick start guides, getting sample code and much more.

Chapter Two

Signing up for a Bluemix Account

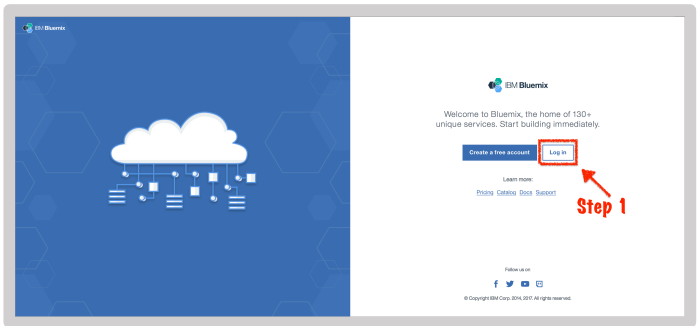
In this chapter, we will set up a Bluemix account

Signing up for Bluemix is very easy. Anyone signing up for Bluemix will always follow the same process.

Note: *If you already have a Bluemix account, skip to the next chapter.*

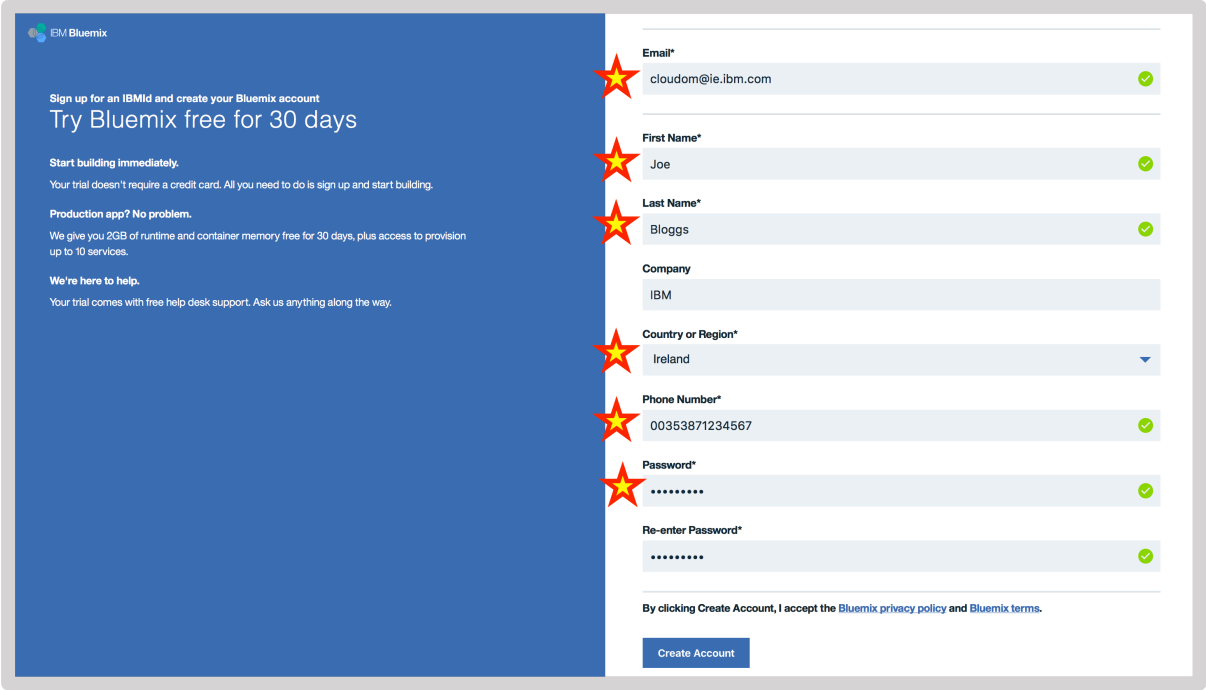
The Steps:

1. Go to www.bluemix.net and Click Sign Up (Fig 2.1)



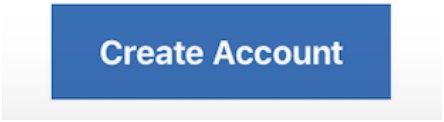
(Fig 2.1)

2. Fill in the details: email address, first and last name, company, country, phone number and finally a unique password (Fig 2.2)



(Fig 2.2)

3. Finally, Click 'Create' (Fig 2.3), which will automatically send you an email to verify your account creation.



(Fig 2.3)

4. Head over to the email account you provided and verify the account.

Tip:

*You now have your own **Bluemix account**, also know as your **IBM ID.***

Chapter Three

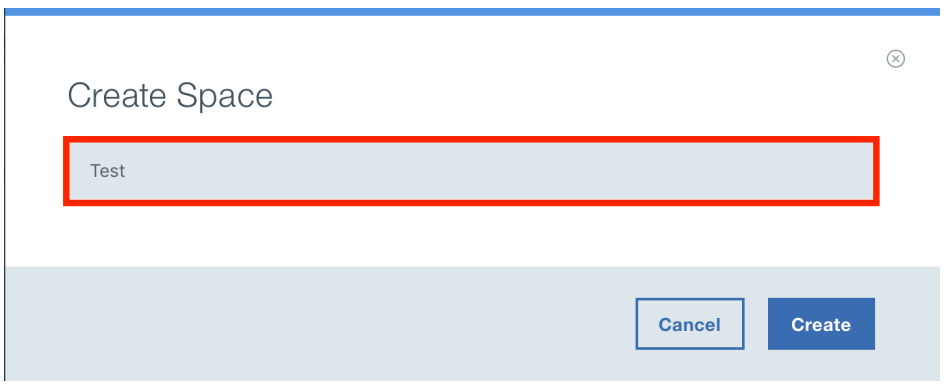
Signing in & Navigating Bluemix

Now that you have a Bluemix account, this chapter will show you how to sign into Bluemix. You will learn how to navigate the console area and the different sections of Bluemix

1. Head back over to the Bluemix homepage, on *www.bluemix.net*

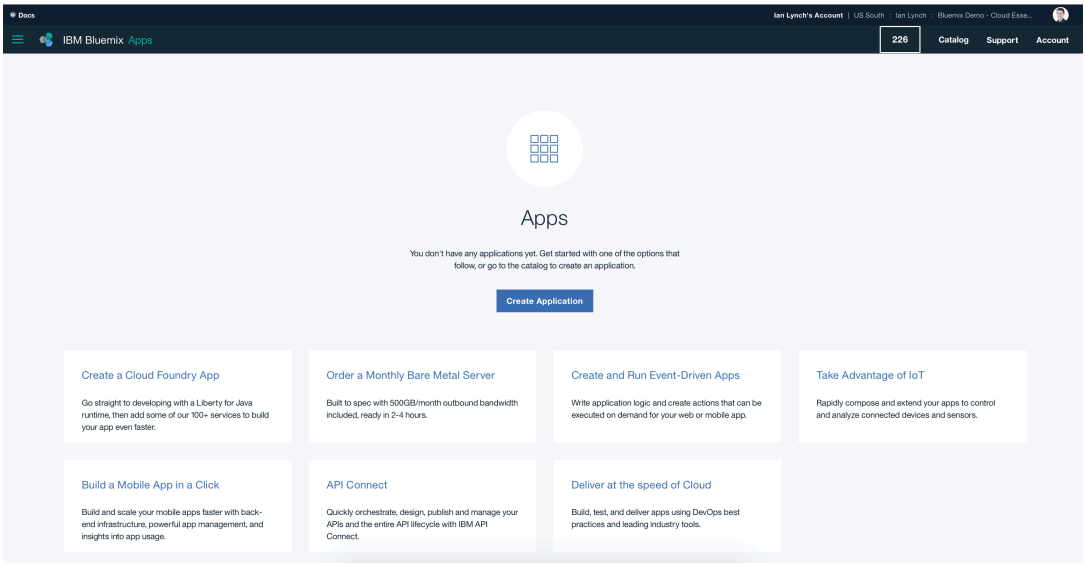
2. Choose the Log in option. Enter your email address and your password.

3. The first time you log in, you will be asked to provide a name for your Organization (I just used my name) and then name your first space (I used "test", like in Fig 3.1). The space is used as your blank canvas where you will build applications.



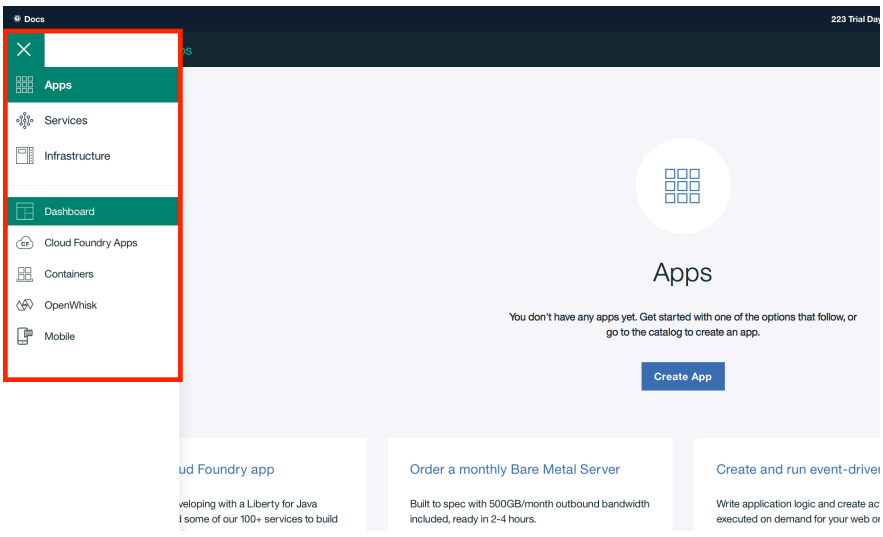
(Fig 3.1)

4. You will now see screen Fig 3.2. As you have no applications running, services consumed or bare metal servers provisioned, the screen will show popular deployment options on Bluemix. But before you deploy your first application, let's take a quick look and see how to navigate through Bluemix.



(Fig 3.2)

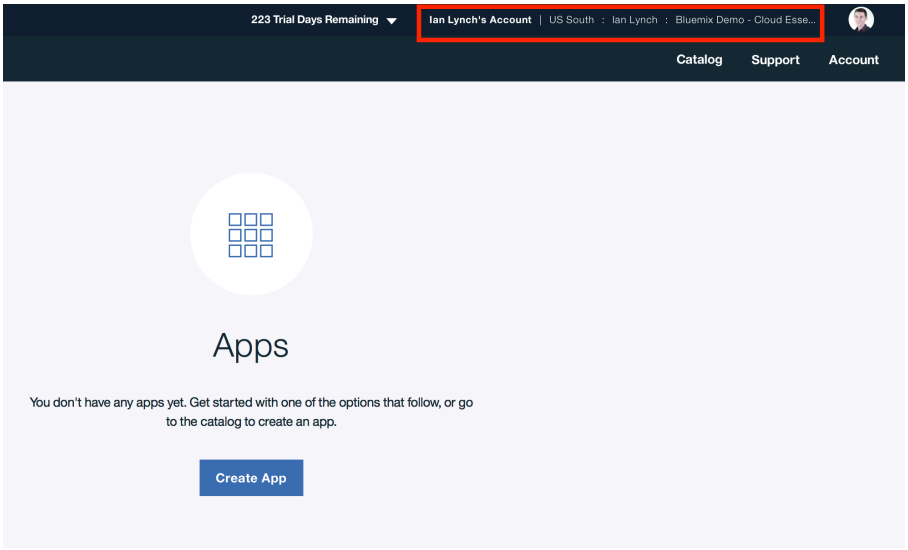
5. Click the hamburger side menu which quickly lets you navigate between apps, services and infrastructure (Fig 3.3). These main functions of the cloud platform and this menu are accessible from every page on Bluemix.



(Fig 3.3)

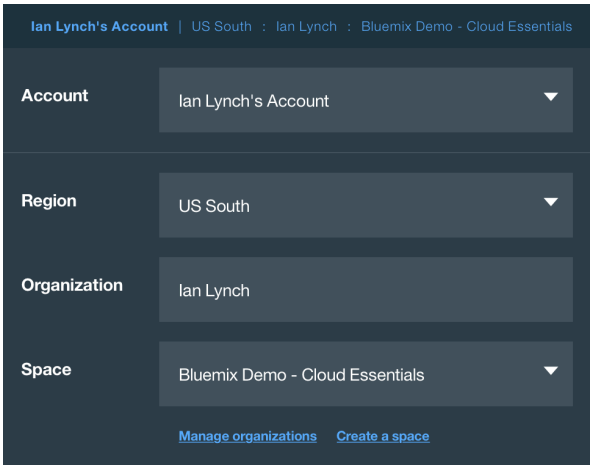
6. Notice above the hamburger menu is where Bluemix Docs are located. This is an amazing resource that will help you not only find information on specific searchable topics, but also explore a great set of resources to get you get started with Bluemix.

7. On the top right side of the screen is a link to see your account and environment information (Fig 3.4).



(Fig 3.4)

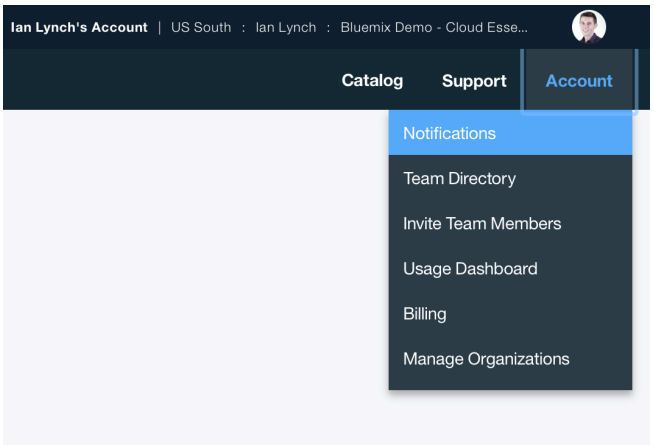
8. Clicking this link will open a drop-down of customizable settings. You have the ability to move between accounts where other Bluemix users have given you access, move between data centers (called regions) and also move between spaces (Fig 3.5)



(Fig 3.5)

9. In this menu, you can also manage your account and create additional spaces (Fig 3.5). You can now close this menu.

10. Click Account to display your account options. (Fig 3.6).



(Fig 3.6)

Notifications - set alert notifications regarding platform updates and maintenance, as well as spending notifications, based on spending limits set by you, the user.

Team Directory – provides a view of who has access to your environment and their level of access. You can further control and manage access from this menu for collaboration.

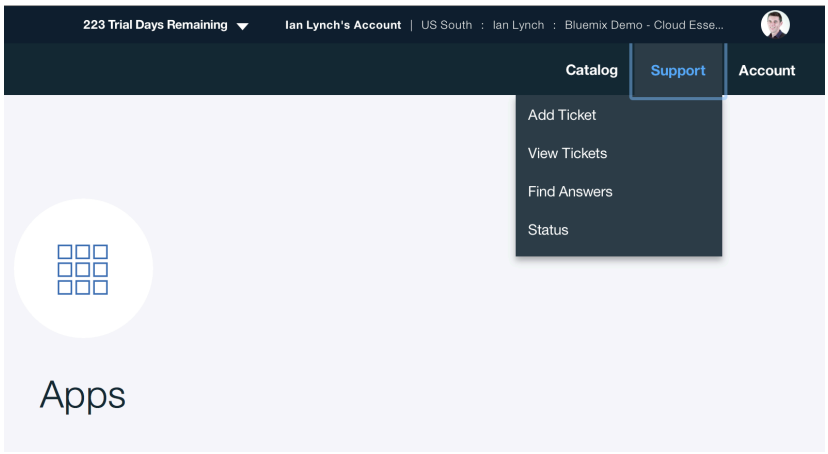
Invite Team Members - gives you a way to invite anyone with an email address to access your account, based on the access level that you grant to them.

Usage Dashboard - offers you an overview of your environment: what is running, how long it has been running, a breakdown of your spending, and more.

Billing – Shows a view of previous invoicing and lets you manage your billing settings for both Pay As You Go and Subscription.

Manage Organizations - allows you to manage your entire environment and perform actions like rename or edit spaces.

11. Now click on the Support menu tab (Fig 3.7) to see additional options



(Fig 3.7)

Add/View Ticket - allows you to create Support tickets or to view currently open tickets.

Find Answers - quickly access the search bar inside the Docs of Bluemix.

Status – provides, in real time, the status of the Bluemix environment and the availability of services by region.

Chapter Four

The Bluemix Catalog

This chapter is an anchor - a place to scroll through the Bluemix catalog to explore what services are of interest to you.

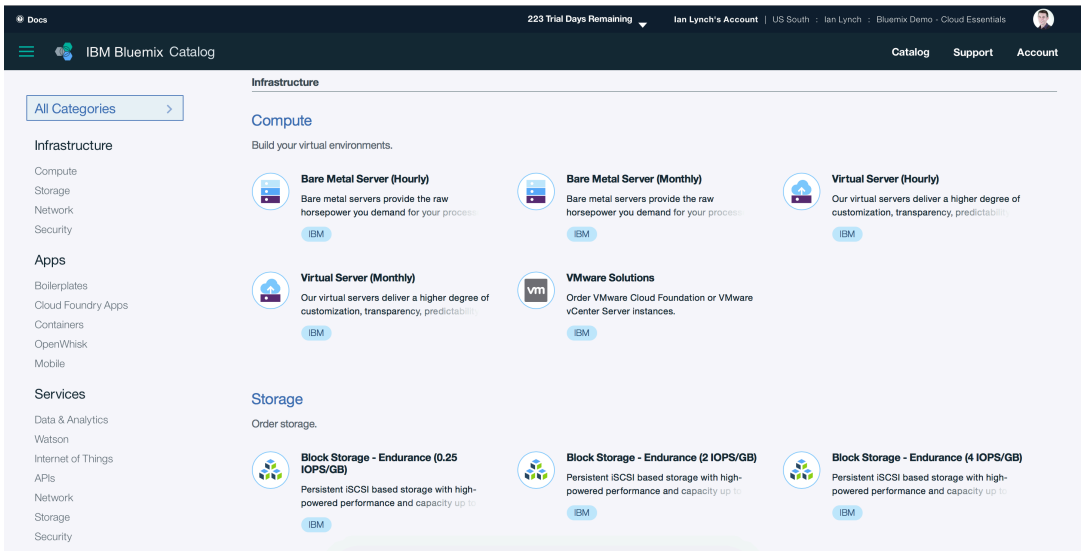
The Catalog menu tab in Bluemix is probably where you will spend most of your time exploring. There are over 130 services and APIs so it could take you a few hours to study each of them in detail. Maybe not everyone will be interested in Databases or in Internet of Things, so in this guide, we will we avoid going into too much detail when walking through the catalog.

For the demo, you are just going to talk about what you see. Each of the categories are listed along the left side menu, with Infrastructure (Compute, Storage, Network & Security), Apps and Services. In your demo, keep each category high level and only talk about the services you know the listener is interested in.

Don't forget that there is a YouTube video which points to a 'typical demo' or walkthrough of the Bluemix catalog.

Here are the first set of category outlines with talking points for each section. Halfway through the catalog, you can open one of the services to show how all Bluemix services are laid out.

First, start with Infrastructure, diving into Compute as you explore around, just like in Fig 4.1. Note how bare metal is offered in both monthly and hourly pricing…just like virtual servers.



(Fig 4.1)

Let's explore some highlights of each category.

<u>Infrastructure</u>:

Compute – Bare Metal and Virtual Servers are offered in hourly and monthly pricing formats to fully customize your IT stack to meet your specific needs. VMware is also available for ordering.

Storage – Choose and order the type of storage you need. Bluemix has a range of storage options, like file storage, block storage and object storage, that can be customized by speed and performance.

Networking – A critical part of Infrastructure, so choices here again are plentiful, with Direct Link and VPN private connections, Load Balancing to improve availability and scalability, and VLAN spanning and Vyatta gateways for secure connections.

Security– Ensure greater protection of your application. Bluemix offers a variety of hardware firewalls and SSL certs to help further lock down your app.

Next, we move to the Apps (or Applications) section of the catalog.

Boilerplates – These are ready-made templates to show the power of Bluemix to get started quickly. The boilerplates are everything you need to get an application up and running in seconds, including sample code.

Cloud Foundry Apps – A compute resource for developers who want an out-of-the-box development experience. This means they don't need to worry about libraries, dependencies, and all of the usual boring stuff a developer needs to deal with before they can start to code. With Cloud Foundry, everything is ready for you to start coding.

Containers – Isolated and secure app environments (or a compute resource) which can support languages and workloads without requiring any programming tools. This makes Containers technology super portable and gives you control without the worry of handling the operating system. This technology is based on Docker.

OpenWhisk – A serverless technology that is great for executing code in a highly scalable way. For example, you may only need a compute resource for when you receive an alert. OpenWhisk can fire up code only for the period it takes to react to the alert, and then shut down. You only pay for when the code is running.

Mobile – Where those ideas can come from the back of your brain stem to the front of your user's mobile device. With a rich set of capabilities for mobile development, this section offers a complete mobile app building platform.

As we continue through the catalog, next we move into the Services section of the catalog.

Tip:

You can always jump or skip sections in the catalog by using the navigation on the left menu bar.

Data & Analytics – a set of services and APIs to help you store and analyze data. As we are creating data all of the time, that data needs a place to be stored using services like Cloudant or the Compose offerings. There are services to analyse the data too. You can also see the fruits of a strategic partnership between IBM and Twitter, unlocking the data to one of the world's biggest social platforms.

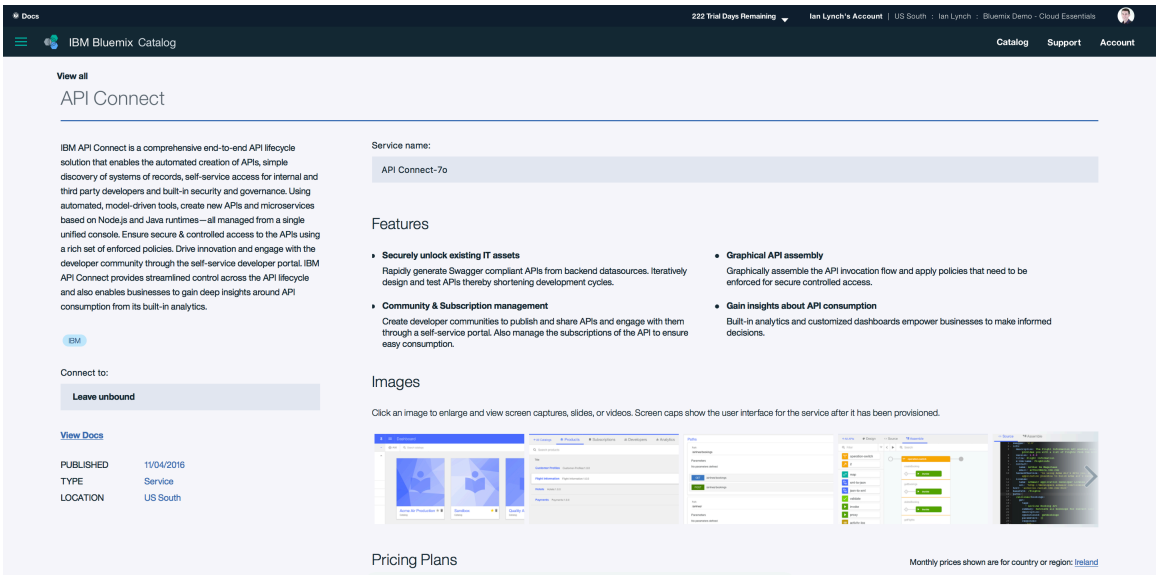
Watson – IBM delivers cognitive capabilities through Watson. Here is where you can enrich your application with services like machine learning and visual recognition. The array of Watson services spans capabilities like analyzing unstructured data like text and images, to gaining a deeper understanding of a person's personality traits.

Internet of Things – Any device that can connect to a network can be IoT, just like your mobile phone. Bluemix offers a complete IoT Platform, which is a set of capabilities to quickly get any device connected to the IBM Cloud. You can stream and analyze that data in real time with IoT services.

APIs – Whether you are leveraging map or traffic data from Google maps, or using a Facebook profile to identify a user, you can create new APIs to consume, monetize, or manage existing APIs with API Connect. This service is a great way to manage the lifecycle of an API.

In the API category, we are going to pause to see that all Bluemix services and APIs within the Bluemix catalog are laid out in the same way.

1. Click and open the API Connect service (Fig 4.2).



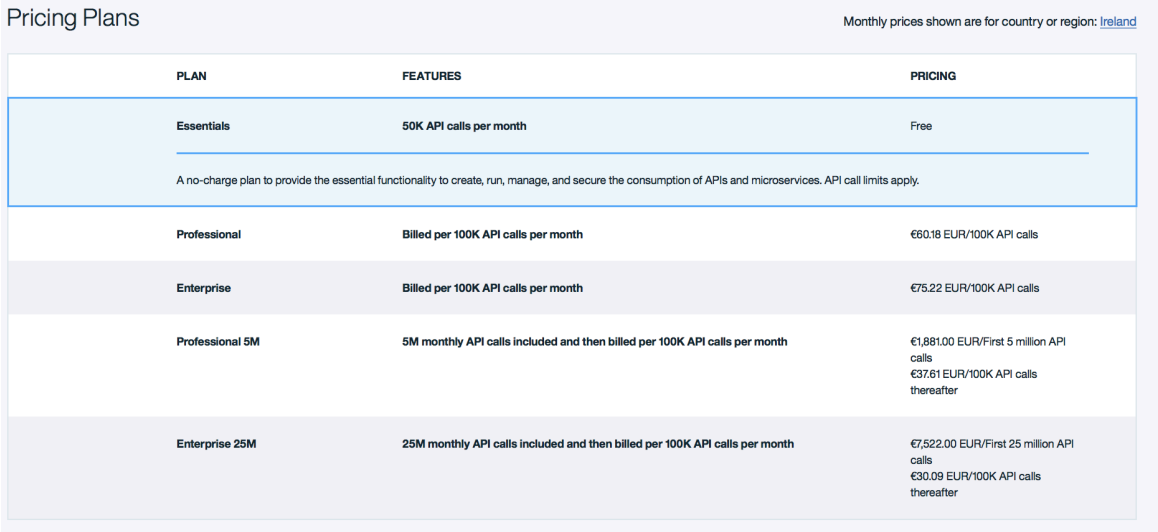
(Fig 4.2)

2. On the top left, you will see a summary of the service

3. Towards the center of the page, you will see the key benefits and features of the service you have opened.

4. Next up are screen shots of the service in action, videos or even slides. You can open these to see them in a larger view (Fig 4.2).

5. Finally, in every service or API, you will find easy to follow pricing information (Fig 4.3).



Pricing Plans

Monthly prices shown are for country or region: Ireland

PLAN	FEATURES	PRICING
Essentials	50K API calls per month	Free
A no-charge plan to provide the essential functionality to create, run, manage, and secure the consumption of APIs and microservices. API call limits apply.		
Professional	Billed per 100K API calls per month	€60.18 EUR/100K API calls
Enterprise	Billed per 100K API calls per month	€75.22 EUR/100K API calls
Professional 5M	5M monthly API calls included and then billed per 100K API calls per month	€1,881.00 EUR/First 5 million API calls €37.61 EUR/100K API calls thereafter
Enterprise 25M	25M monthly API calls included and then billed per 100K API calls per month	€7,522.00 EUR/First 25 million API calls €30.09 EUR/100K API calls thereafter

(Fig 4.3)

Note:
The pricing section is laid out in a very simple way. For Bluemix Public, pricing is always based on tiers. Services have different tiers depending on how they are measured, like # API calls, or # Gigabytes or Terabytes used, or # Instances. The majority of our services will have a free tier, just like API Connect, so you can test drive the service and ensure that it is a fit for your need.

6. Now click 'View All' on the very top of this page to continue with the rest of the Bluemix services.

Going back to the catalog will bring you to the top section, so scroll down to Network and let's continue to explain what we see.

Network – you have already seen this in the Infrastructure section.

Security – The Security service offerings have been designed especially to provide added security for an application, with services like Application Security on Cloud that scans your web or mobile application for vulnerabilities, or Single Sign-On for implementing user authentication.

Tip: Bluemix is very secure, but every application should consider additional Security

DevOps – Development Operations describes the lifecycle of an application, from inception to production to upgrades to eventual retirement. The range of DevOps services within Bluemix helps you respond to markets changes faster, improve code quality, scale without disruption, and foster a new world where business, IT and Operations come together.

Third Party

IBM doesn't just provide IBM services on Bluemix. We also host a range of services from third party providers, like Load Impact or New Relic. You will see here that IBM services have an **IBM** tag, in blue, while **Third Party** services carry a green tag

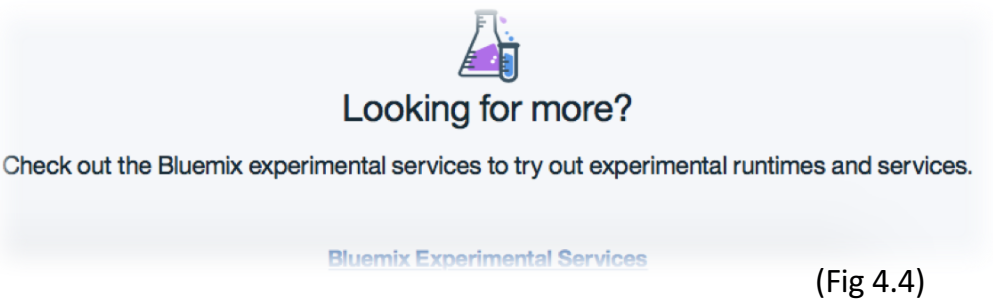
Application Services – provides a huge range of services to complement a web or mobile application. These services help developers spend less time coding and more time innovating.

Integrate – A rich set of integration services to create a truly hybrid experience, with services that help you leverage your existing on-premises investments. Bluemix has services like Secure Gateway for connecting another source to Bluemix, and a third party service like Rocket Mainframe Data to easily leverage existing mainframe data.

At the end of the catalog, you will notice a section for Bluemix experimental services.

Experimental Services

Located at the bottom of the catalog is a link to the Bluemix experimental services. These are services that IBM is assessing to understand the value they might provide to our users. Experimental services are also a great way to see what potential technologies could arrive next on Bluemix. Experimental services are never for production use (Fig 4.4).



(Fig 4.4)

Chapter Five

Creating a Bluemix application

In this chapter, you will deploy a demo application for Bluemix using a Watson service.

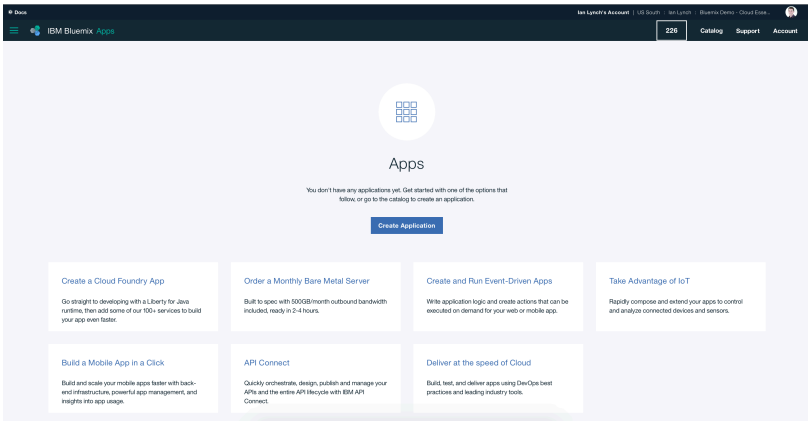
Now that you have finished exploring the Bluemix catalog, you are ready to begin creating your first app.

Let us make up a scenario to define this small application.

You are about to deploy an application on Bluemix using a boilerplate. This is a pre-populated template which has all of the components this application needs to run - the compute resources (Node.js for Cloud Foundry) and the actual Bluemix service (Watson Personality Insights). The end result be a web front-end (or website) where a user can provide text to analyze a spectrum of cognitive and social characteristics.

Node.js = For running the front end (with sending and receiving data)
Watson PI = For Linguistic Analysis of the provided data

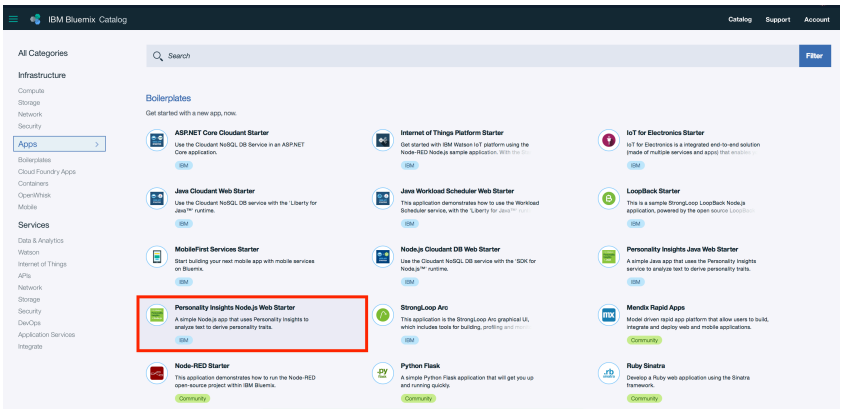
1. To access your dashboard, click the Bluemix logo on the top left of the screen (Fig 5.1)



(Fig 5.1)

2. In the center of the screen, you will now see, Create Application, which will take you to the Bluemix catalog.

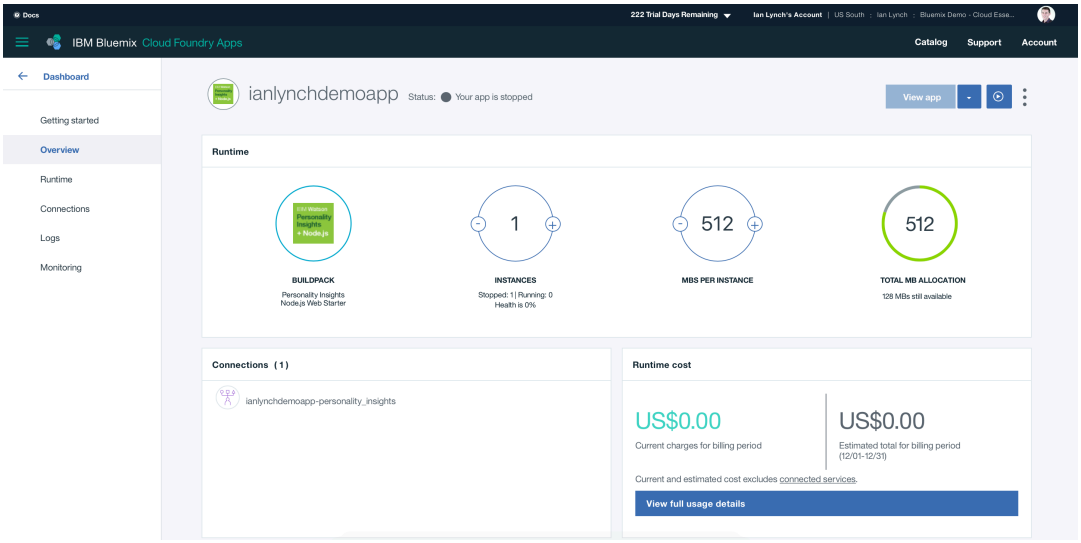
3. Now select: Personality Insights Node.js Web Starter (Fig 5.2)



(Fig 5.2)

4. Give your app a unique name and press create (notice how the host is automatically populated also). After a few moments you will be greeted with the getting started page.

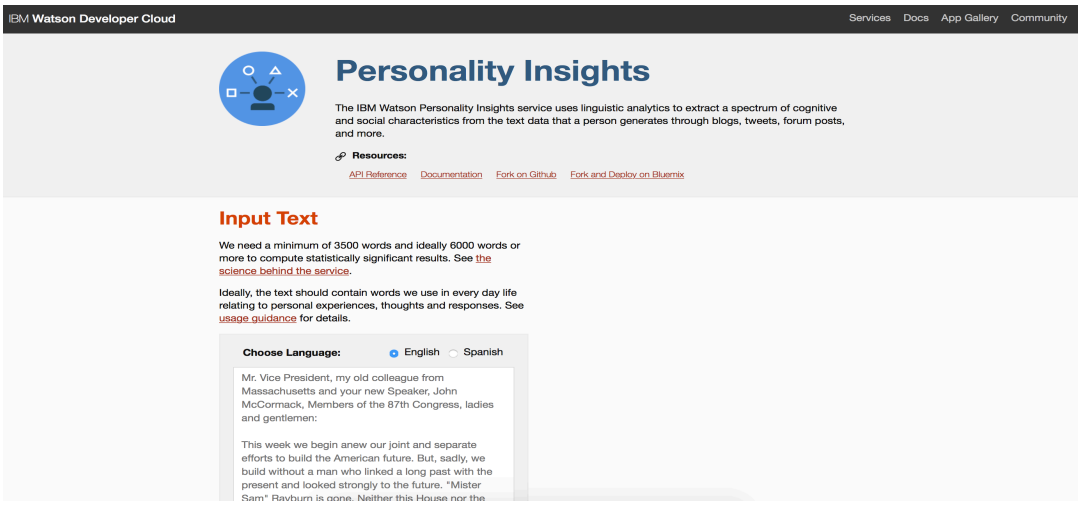
5. Click the Overview tab on the left menu to show the compute, services, cost and activity of the application (Fig 5.3).



(Fig 5.3)

From here, show that you can manually increase and decrease the # of instances and memory allocation for the application. Hitting reset will bring these back to their original values. Clicking Save will apply these settings to your app (after a quick restart).

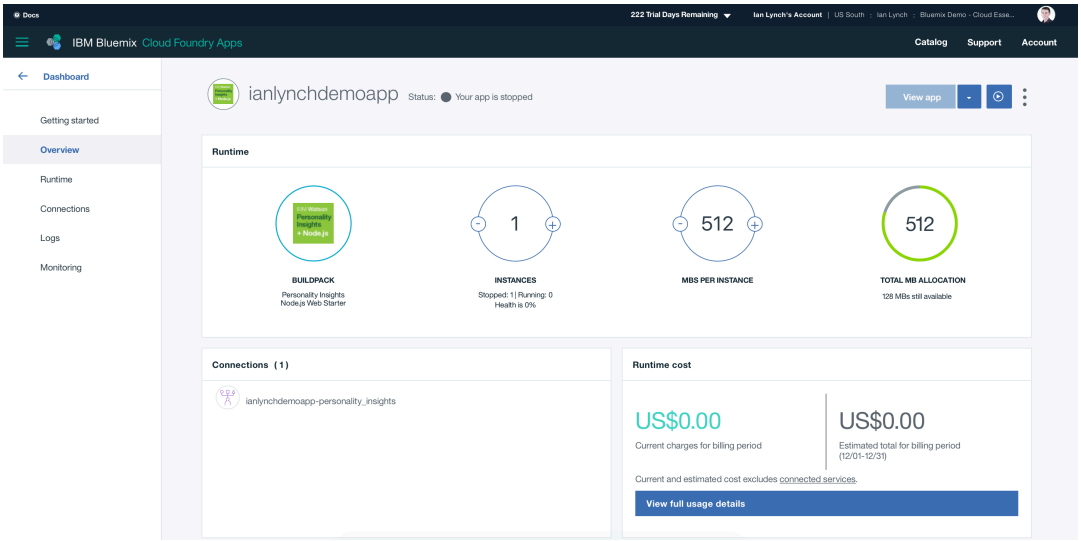
6. Now you can open your running application by clicking 'View App' (Fig5.3), which will display your running application (Fig 5.4)



(Fig 5.4)

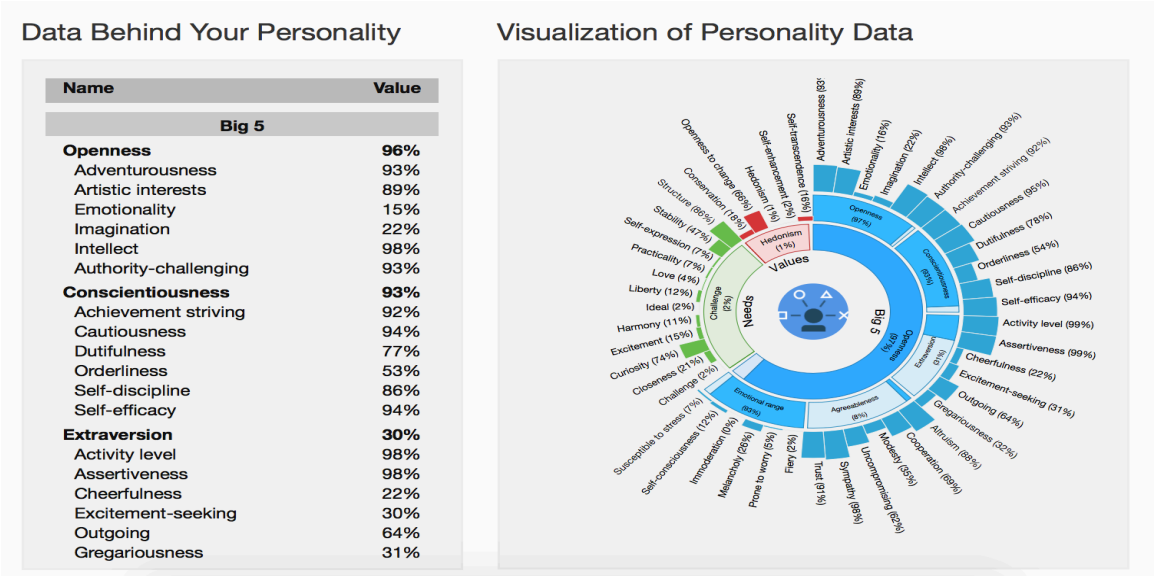
At this point, you can use either the provided text that the application is already pre-populated with, or choose your own text to analyze through the Personality Insights service.

7. Now click ‘Analyze’ to display the result s (Fig 5.5).



(Fig 5.5)

This snippet of text was analyzed through the Watson Personality Insights service on Bluemix. The service provided a personality portrait (Fig 5.6).



(Fig 5.6)

Here is a little background on the Personality Insights service:

IBM Watson augments traditional social media analytics with cognitive algorithms to bring businesses more powerful discoveries and outline new ways of creating and consuming social media insights. Personality Insights helps businesses understand their customers in entirely new ways.

Personality Insights extracts three types of personal characteristics from the data a person generates in social media or within their written digital communications:

- **Big Five** personality characteristics represent the most widely used model for generally describing how a person engages with the world. The model includes five primary characteristics, or dimensions: *Agreeableness*, *Conscientiousness, Extraversion*, *Emotional Range* and Openness.

- **Needs** describe which aspects of a product will resonate with a person. The model includes twelve characteristic needs: *Excitement*, *Harmony*, *Curiosity*, *Ideal*, *Closeness*, *Self-expression*, *Liberty*, *Love*, *Practicality*, *Stability*, *Challenge*, and *Structure*.

- **Values** describe motivating factors that influence a person's decision-making. The model includes five dimensions of human values: *Self-transcendence / Helping others*, *Conservation / Tradition*, *Hedonism / Taking pleasure in life*, *Self-enhancement / Achieving success*, and *Open to change / Excitement*.

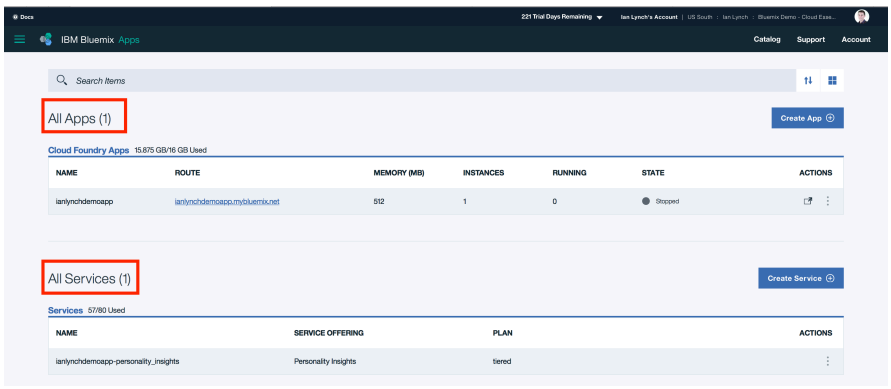
Chapter Six

Enriching your Application with Services

In this chapter, you will enrich your newly created application with additional services from the Bluemix catalog.

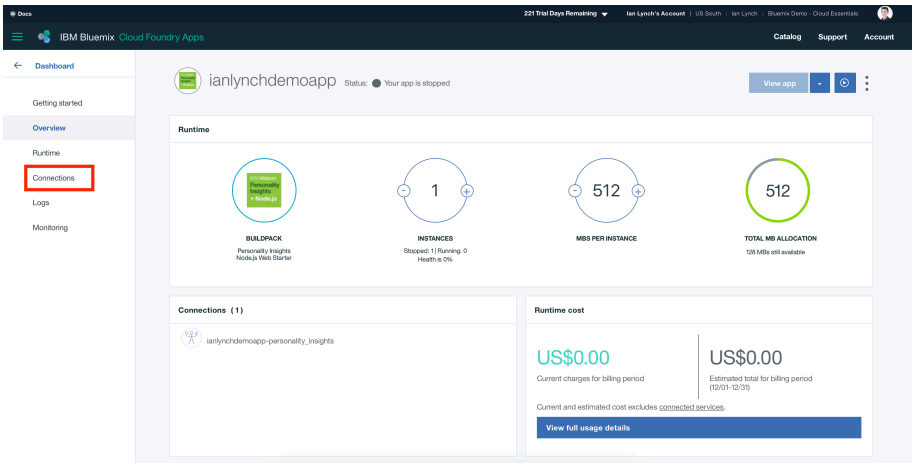
Now that your Personality Insights application is running, it is time to get your application to do more using the vast range of service from the Bluemix catalog.

1. Head back over to Bluemix and click on the Bluemix logo to bring you back to your Dashboard. You will notice that this time you have one application and one service running – what we did in the prior chapter (Fig 6.1).



(Fig 6.1)

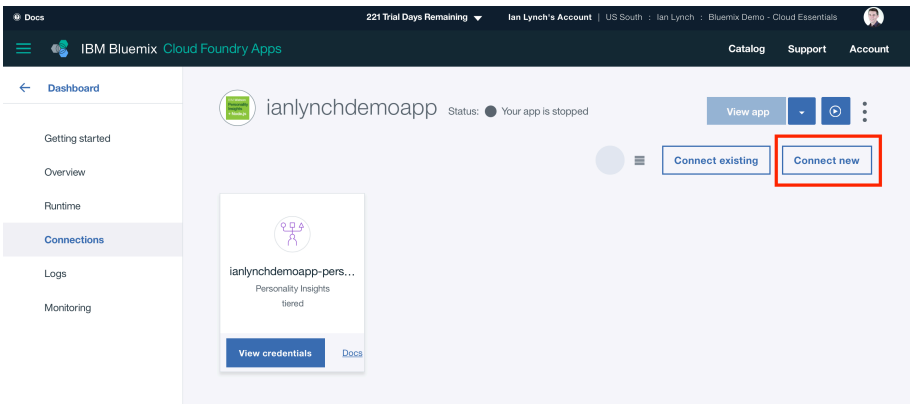
2. Click anywhere beside your app name (but not on the app name, as this will open your app) to re-open the overview page (Fig 6.2).



(Fig 6.2)

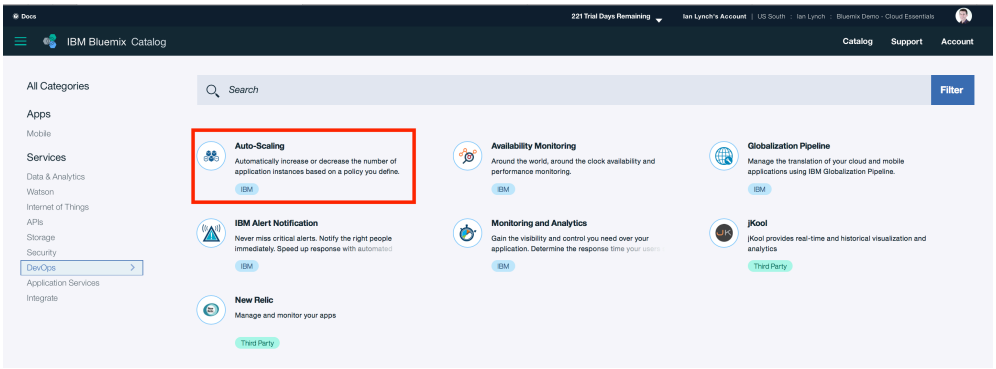
3. To add a connection (or service), open the connections tab (Fig 6.2)

4. Above the already attached service (Watson Personality Insights), select ‘connect new’ to open the Bluemix catalog and connect a new service to your application (Fig 6.3).



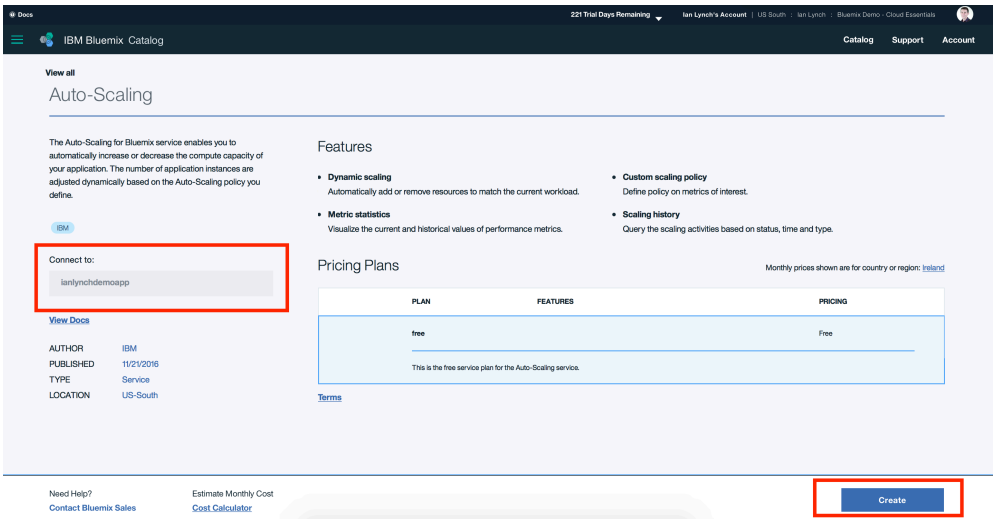
(Fig 6.3)

5. In the Bluemix catalog, choose a service to connect to your application. You can either search for “Auto-Scaling” or find this in the DevOps category. Auto-scaling is great. As demand grows, your application can tap into more Compute resources to meet its needs. As demand shrinks, your application can free up resources so you’re not charged for unused resources.
Click the service to select it (Fig: 6.4).



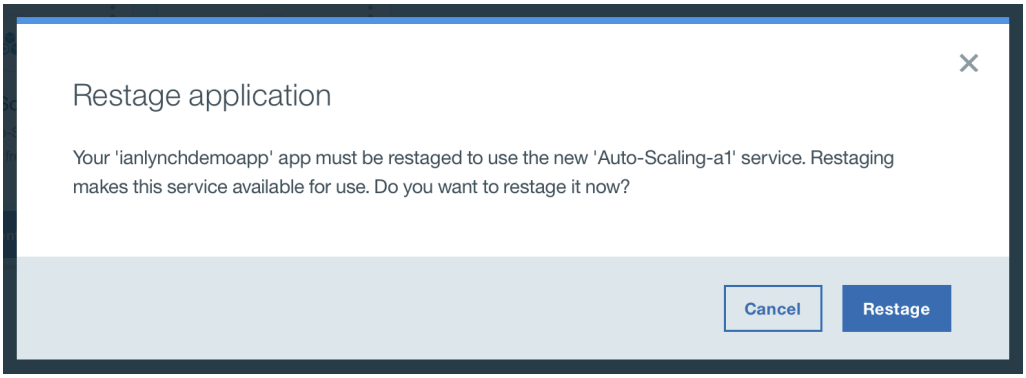
(Fig 6.4)

6. Next, ensure that your service is pointing to your application and press create (Fig 6.5).



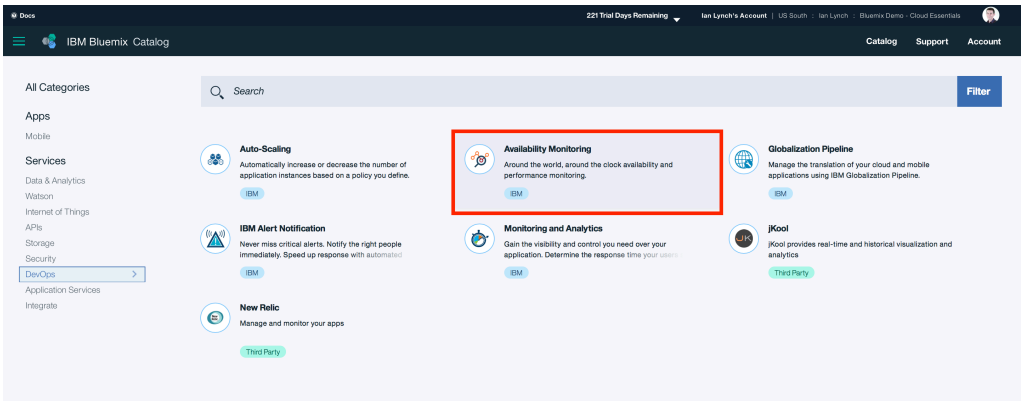
(Fig 6.5)

7. Now select “Restage application” and you will be brought to the Overview menu while your app is restarting (Fig 6.6).



(Fig 6.6)

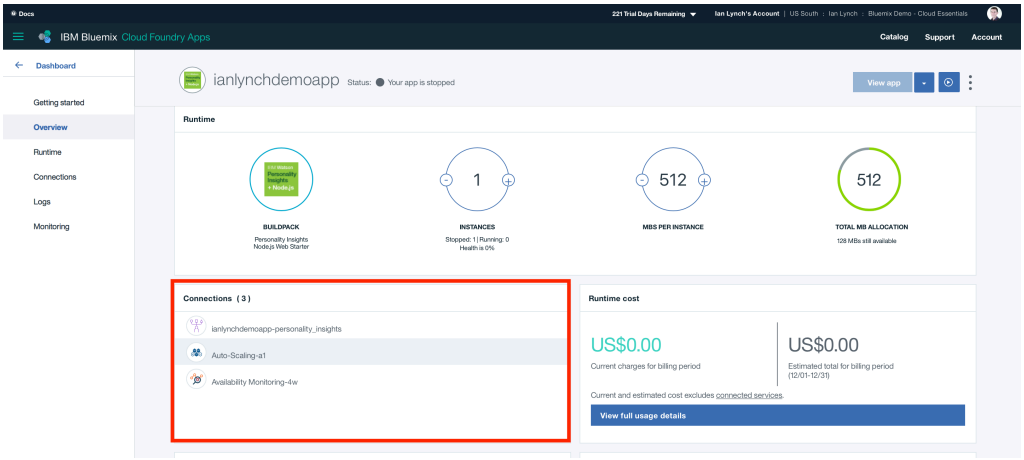
8. Now let’s add another service to your application. Navigate to the connections menu on the left again. Again click ‘Connect New’. This time from the catalog, select ‘Availability Monitoring’ in DevOps (Fig 6.7).



(Fig 6.7)

9. Ensure that your service is pointing to the right application and click ‘Create’. You will need to restage the app (as before) to let Bluemix know that your app now has an additional service.

10. Once your application has restarted, you will notice that when you land back at the Overview menu, you have 3 services connected to your application (Fig 6.8).



(Fig 6.8)

Your demo is now complete. You now have an application running on Bluemix. Your demo application is leveraging the power of Watson's Personality Insights to understand personality characteristics. The application will scale automatically based on user demand and has built-in monitoring for your peace of mind.

5 STEPS

1. Sign in to show the navigation and account menu
2. Open the Bluemix catalog and explore the services
3. Deploy a Bluemix application (Boilerplate)
4. Show your application running
5. Enrich your application with a service (or two)


IBM Bluemix™
Developer Experience
(No coding required)

Chapter Seven

Pre-requisites to create an app

In this short chapter, we show you the developer experience for IBM Bluemix

You have already deployed an application to Bluemix using a boilerplate with the Watson Personality Insights service. This is a great way of showing how easily an application can be deployed, and the power of enriching an application with Bluemix services. The boilerplates are not usually how a developer would deploy an application, though, so in these next two chapters you will learn how to demo Bluemix from a developer's perspective. Below is a link to a video which is an example of this.

https://www.youtube.com/watch?v=bmkg_2BjS9o

Or search YouTube for: Developer Experience of Bluemix 2017

The pre-requisites for this demo can be done during your first walk through of the guide in the next chapter: Creating and Deploying an Application.

In the previous demo, we deployed an app using pre-populated code (in a template format). This time, we will deploy the application to Bluemix using the Bluemix Command Line Interface (also known as Bluemix CLI).

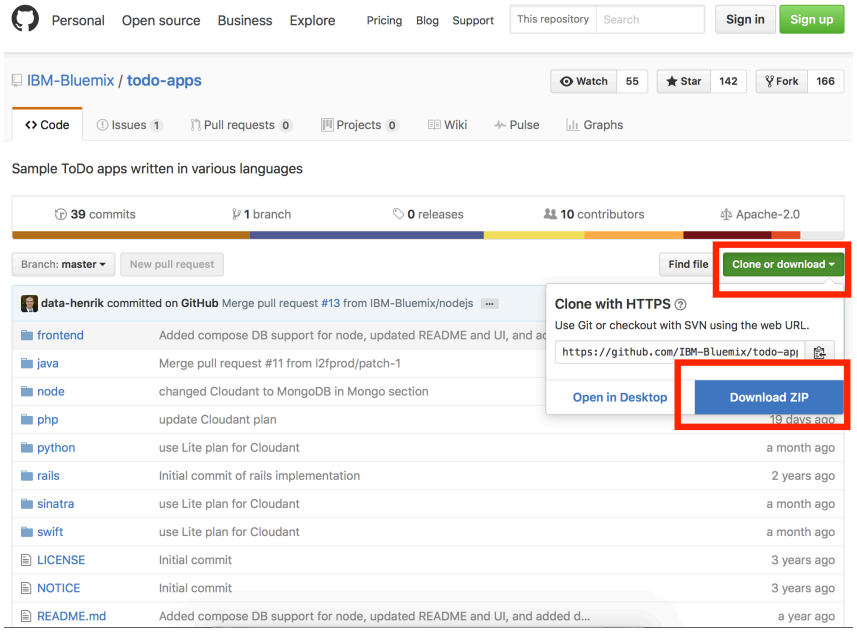
Essentially, you will take a configured application, in the form of source code (a folder of files, more folders and developer code), and send it to Bluemix so our application will run in the cloud.

In order to send your source code to Bluemix, you will send it via the CLI (Command Line Interface). The CLI tool and your source code are the only pre-requisite to creating this application. The CLI is a once off download and install and it's best to just bookmark the link to the downloadable source code folder.

For your reference, here is the link to the source code for the demo:

https://github.com/IBM-Bluemix/todo-apps

On the IBM GitHub page, select ‘Clone or Download’ and then choose ‘Download Zip’ (Fig 7.1).



(Fig 7.1)

Once you have this downloaded, don’t forget to bookmark the page as a handy reference.

Tip:

Best practice - unzip your downloaded source code to your Desktop.

Chapter Eight

Creating and Deploying an Application

In this chapter, you will deploy an application and enrich it with services from the Bluemix catalog. This demo will be more suited for a technical or developer audience, yet it is still very easy to do.

1. Log into Bluemix and navigate to your dashboard (Fig 8.1).

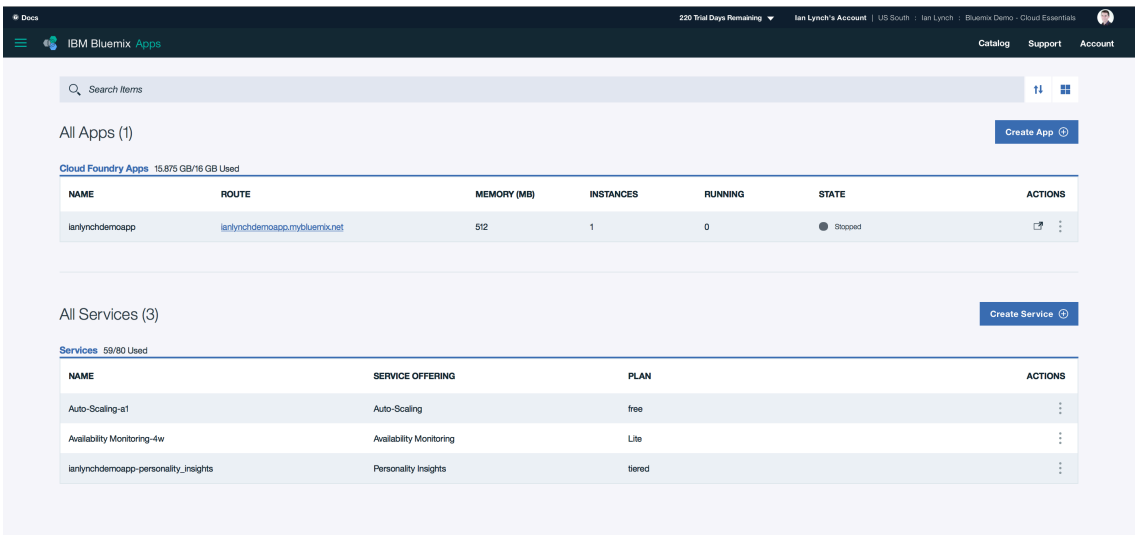
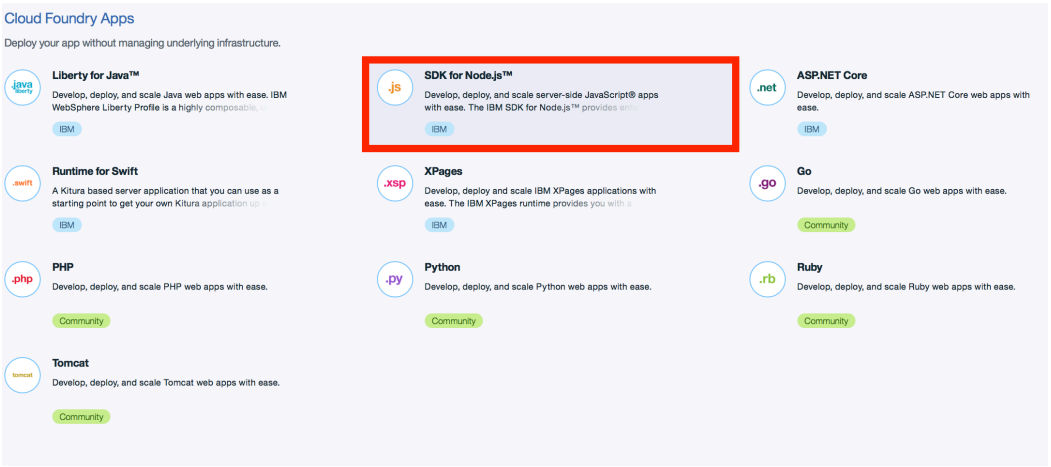


Fig 8.1

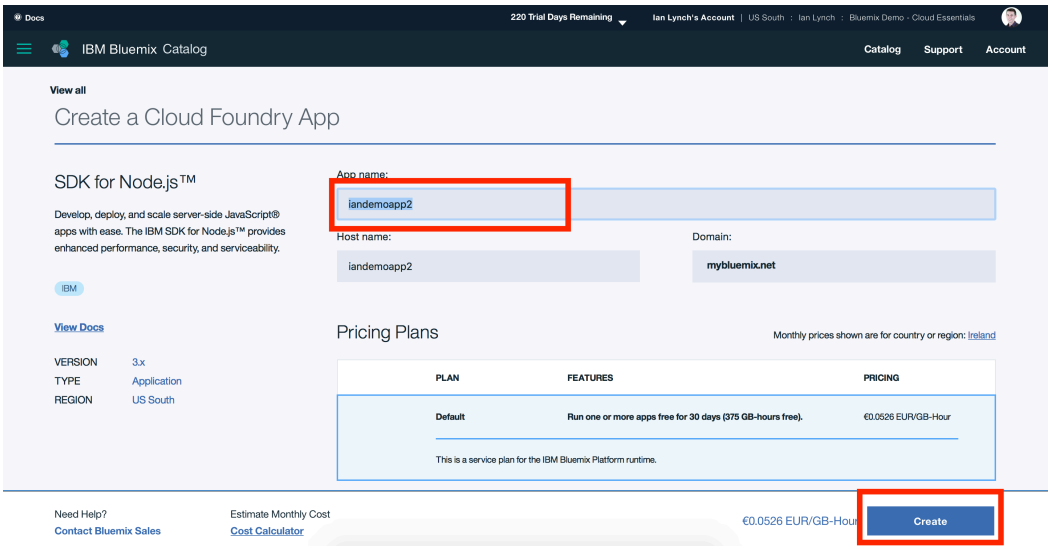
2. Click 'Create App' on the top right. You will be greeted with a familiar view, the Bluemix catalog.

3. Now scroll beyond the boilerplates to Cloud Foundry Apps. Select the 'SDK for Node.js' (Fig 8.2).



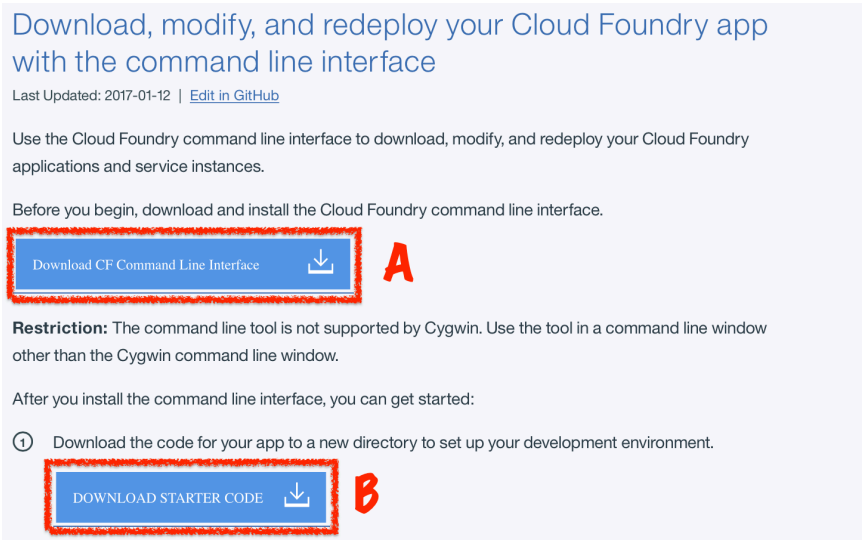
(Fig 8.2)

4. Give your application a unique name and press 'Create' to start your application in Node.js (the runtime for our programming language) See Fig 8.3.



(Fig 8.3)

5. While your application is starting, go to the 'Getting Started' page. Now you will have the opportunity to perform your one time download of the Bluemix CLI (label A in Fig: 8.4). Click on the icon to download and then choose an appropriate installer (Mac OS or Windows).



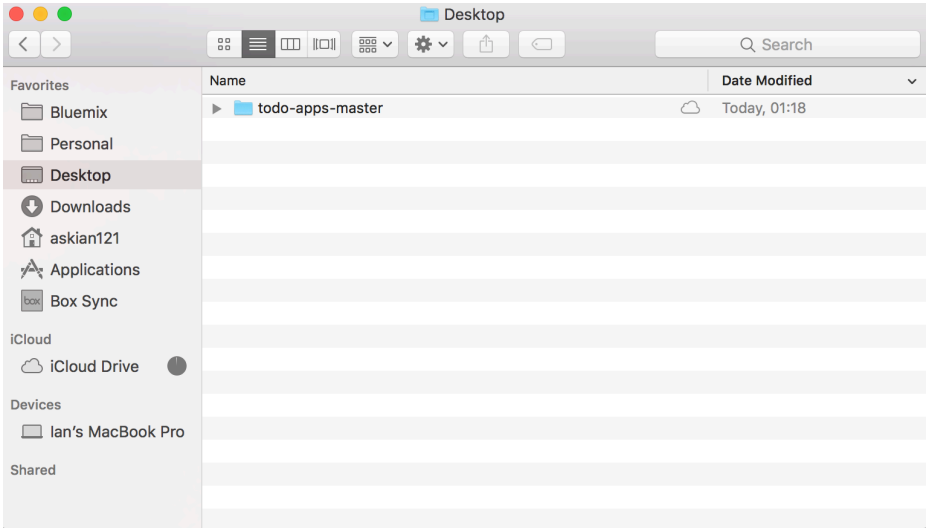
(Fig 8.4)

6. While the CLI is downloading, notice that you have the option to download the source code of the application. A developer would take this downloadable file and begin to write code (for an out-of-the-box experience). However, the source code which you downloaded in the previous chapter includes the same files and components, with some added bonuses. (label B on Fig 8.4).

7. Once your application has started, you can open the app by clicking 'View App'. This will display a "Hello World" web application. This is a blank canvas for a developer now to write a Node.js application.

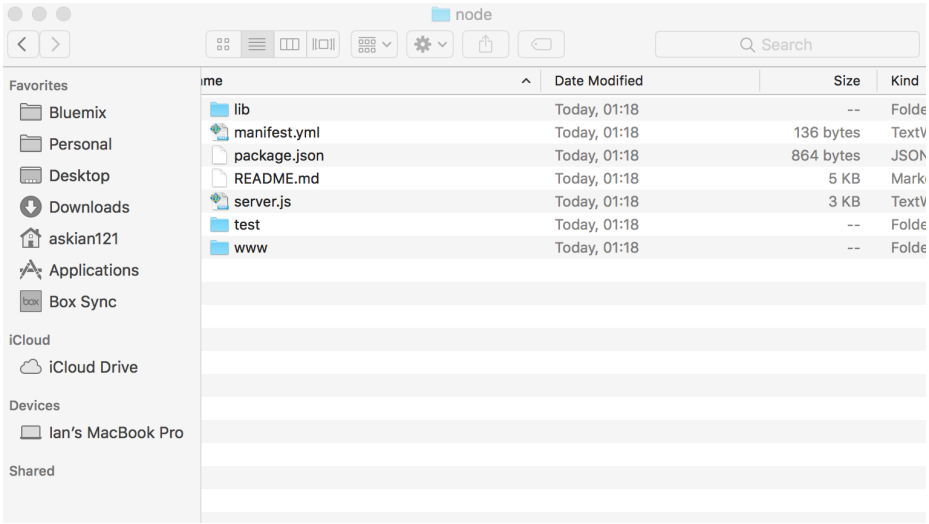
Now it is time to send your source code to Bluemix.

5. After extracting the downloaded source code to your Desktop, we need to first personalize this a little. (Fig 8.5).



(Fig 8.5)

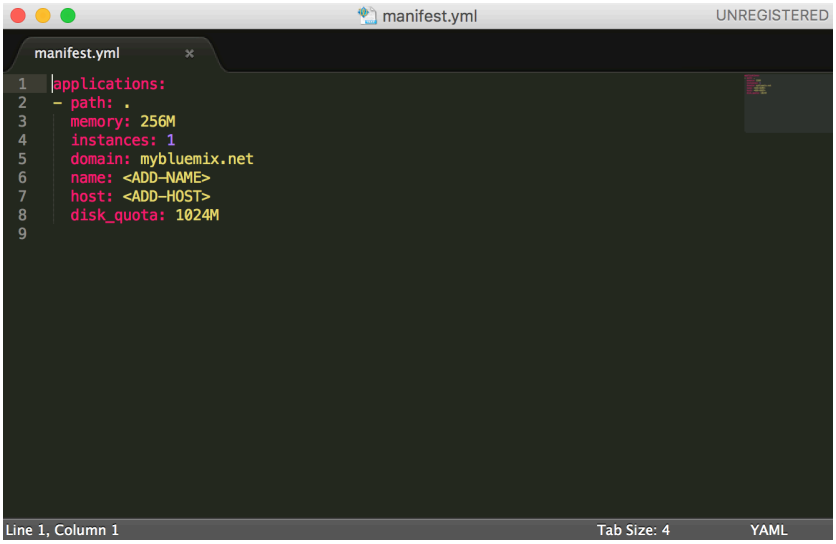
6. Navigate, within this folder, to 'todo-apps-master', then to 'node'. This is the source code for the application, written in Node.js (Fig 8.6).



(Fig 8.6)

In this folder, the **manifest.yml file** is very important. This contains the instructions for the application to start and run on Bluemix. When you send your source code (the folder contents) to the cloud, this is the first thing which Bluemix will look for in the folder.

7. Open the manifest.yml file in a text editor (Fig 8.7).



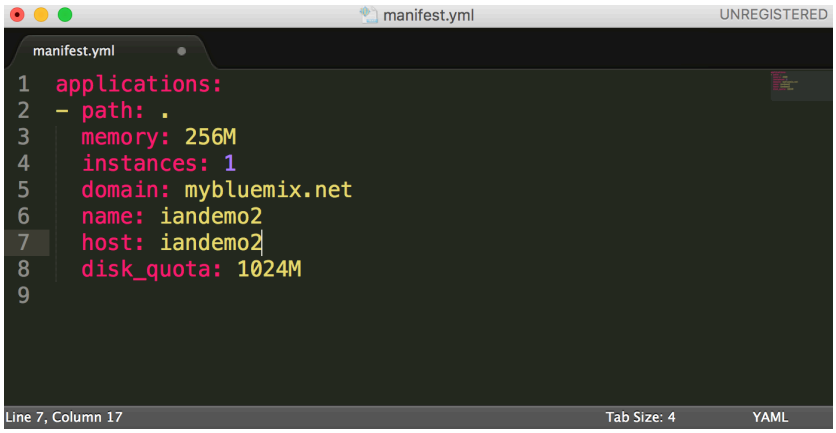
(Fig 8.7)

If you do not have a text editor installed on your machine, there are many free versions available (all will do the same job):

Windows: NotePad++
https://notepad-plus-plus.org/download/

Mac: Text Wrangler
http://www.barebones.com/products/textwrangler/download.html

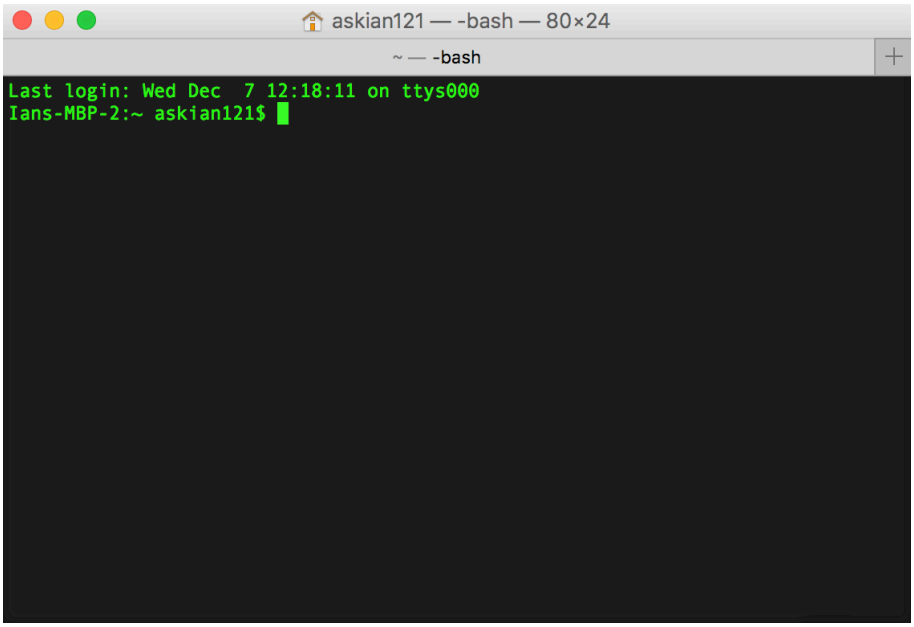
8. You now need to add the 'name' and 'host' of your application to the manifest file to match the runtime you created in Step 4. In this case, it was 'iandemo2' (Fig 8.8).



(Fig 8.8)

9. Save the manifest file. Now you are ready to push your code into Bluemix.

10. Open the Command Line of your machine. On Windows this is the 'Command Prompt' and on Mac it is 'Terminal' in the Utilities folder under Applications (Fig 8.9).



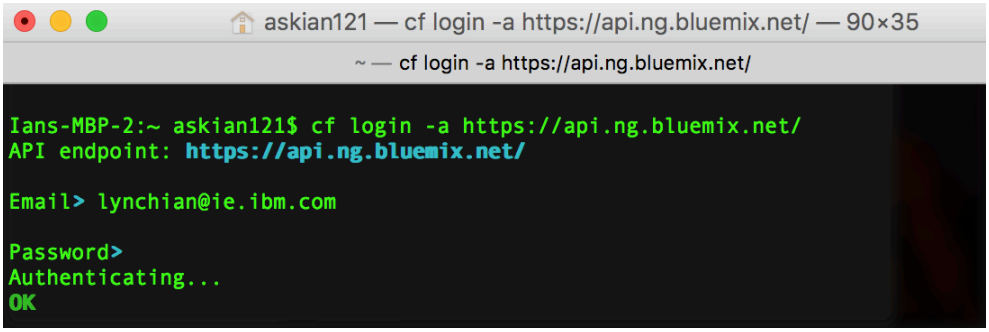
(Fig 8.9)

11. Ensure that you have the Cloud Foundry Command Line installed by typing 'cf help' and pressing enter. This will display information on Cloud Foundry. You can then clear this message by typing 'clear' and hitting enter again.

12. Now you need to log into Bluemix via the CLI (Command Line Interface). To do this, type:
cf login –a https://api.ng.bluemix.net

(Fig 8.10)

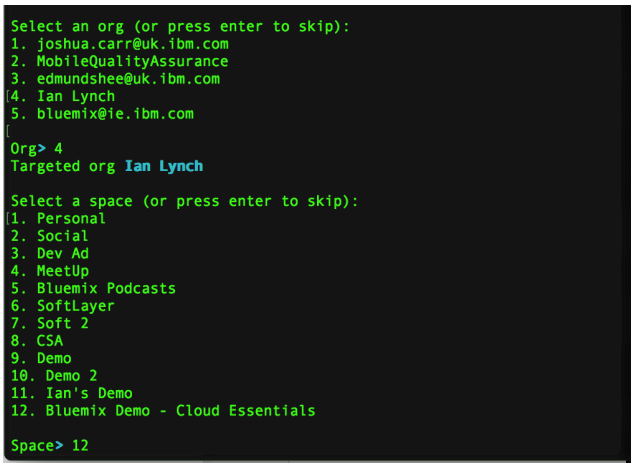
13. Enter your email address and password (not seeing your password while you type is normal) Fig 8.11.



(Fig 8.11)

Note: If you only have one org and space, the CLI will automatically point to this one so skip step 14.

14. Now choose your Organization and space by pressing the corresponding number and then return (Fig 8.12).



(Fig 8.12)

15. You are now logged into Bluemix via the CLI, pointing to your org and space. Bluemix is now ready to intercept the code which you are about to send. (Fig 8.13).

(Fig 8.13)

This application uses a Database, which Bluemix will look for when it arrives at Bluemix. Therefore, we need to start the Database (DB) service. We can go to the Bluemix catalog and start this service, or just do it from the CLI (as we are already here).

16. Enter the following command to the CLI to start the Cloudant Service on Bluemix:
cf create-service cloudantNoSQLDB Lite todo-db

```
API endpoint:   https://api.ng.bluemix.net (API version: 2.54.0)
User:           lynchian@ie.ibm.com
Org:            Ian Lynch
Space:          Bluemix Demo - Cloud Essentials
Ians-MBP-2:~ askian121$ cf create-service cloudantNoSQLDB Lite todo-db
Creating service instance todo-db in org Ian Lynch / space Bluemix Demo - Cloud Essentials as lynchian@ie.ibm.com...
OK
Ians-MBP-2:~ askian121$
```

(Fig 8.14)

17. Once the service has started, you need to point to the source code (saved on your desktop as a folder called todo-apps-master). To point to this folder type the following:
cd Desktop/todo-apps-master

```
API endpoint:   https://api.ng.bluemix.net (API version: 2.54.0)
User:           lynchian@ie.ibm.com
Org:            Ian Lynch
Space:          Bluemix Demo - Cloud Essentials
Ians-MBP-2:~ askian121$ cf create-service cloudantNoSQLDB Lite todo-db
Creating service instance todo-db in org Ian Lynch / space Bluemix Demo - Cloud Essentials as lynchian@ie.ibm.com...
OK
Ians-MBP-2:~ askian121$ cd Desktop
Ians-MBP-2:Desktop askian121$ cd todo-apps-master/
Ians-MBP-2:todo-apps-master askian121$
```

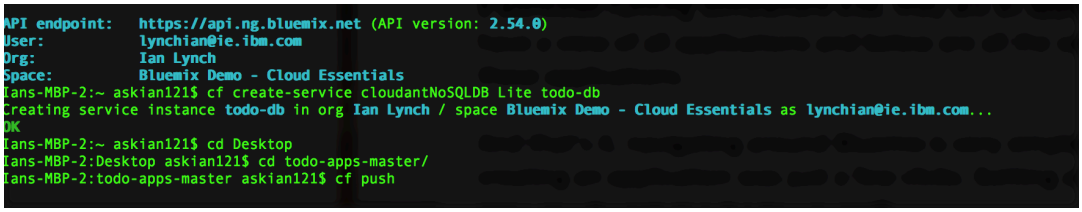
(Fig 8.15)

18. Once the service has started, you need to point to the source code (saved on your desktop as a folder called todo-apps-master). To point to this folder type the following:
cd Desktop/todo-apps-master/node

```
API endpoint:   https://api.ng.bluemix.net (API version: 2.54.0)
User:           lynchian@ie.ibm.com
Org:            Ian Lynch
Space:          Bluemix Demo - Cloud Essentials
Ians-MBP-2:~ askian121$ cf create-service cloudantNoSQLDB Lite todo-db
Creating service instance todo-db in org Ian Lynch / space Bluemix Demo - Cloud Essentials as lynchian@ie.ibm.com...
OK
Ians-MBP-2:~ askian121$ cd Desktop
Ians-MBP-2:Desktop askian121$ cd todo-apps-master/
Ians-MBP-2:todo-apps-master askian121$
```

(Fig 8.16)

19. Now enter ‘cf push’ to send your source code to Bluemix:
cf push

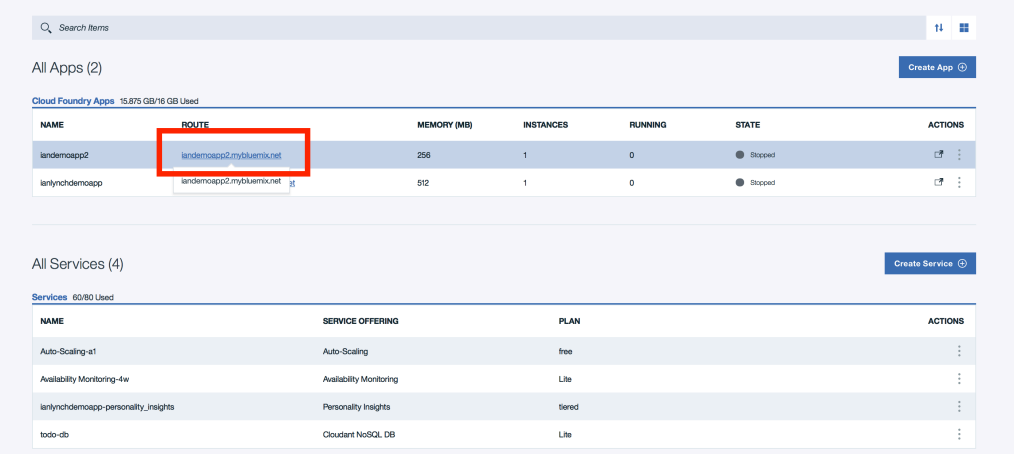


(Fig 8.17)

The source code will take 2-3 minutes to send to Bluemix and then your application will be running. At this time, you can also head over to Bluemix and you will be able to see notifications appear. That’s just Bluemix receiving the code and starting the new application. It’s normal.

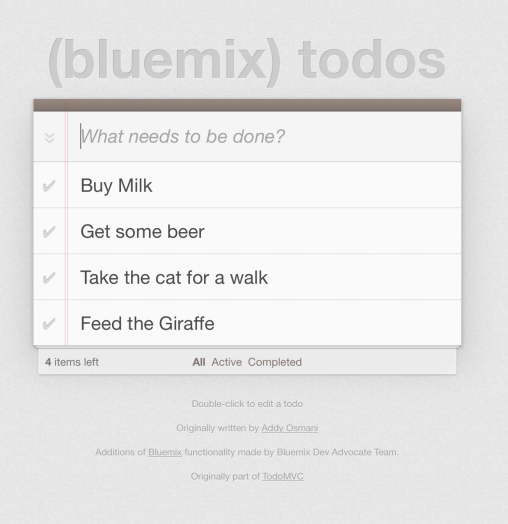
20. Head over to the Bluemix dashboard and launch your application (Fig 8.18)

<u>DO NOT CLICK</u> THE APP NAME (marked red) –
Just click somewhere along that same line to open your controls



(Fig 8.18)

21. You can now add entries into the ToDo list, which the app will automatically store into the Cloudant database (Fig 8.19)



(Fig 8.19)

Each entry you add to your ToDo list will be added to the Cloudant database service connected to this application. You can click on your Cloudant service in Bluemix and open the Cloudant web dashboard. In this view, you can see you database entries (in json format, which a developer would easily understand)

Tip:

To really showcase the power of Bluemix you could enrich the application with another service, maybe auto-scaling. You can easily do this by following the steps in Chapter 6.

To see how this demo would be presented, scan the QR code or use the link below

YouTube Search: Bluemix Developer Experience 2017

https://youtu.be/bmkg_2BjS9o

Notes

Notes