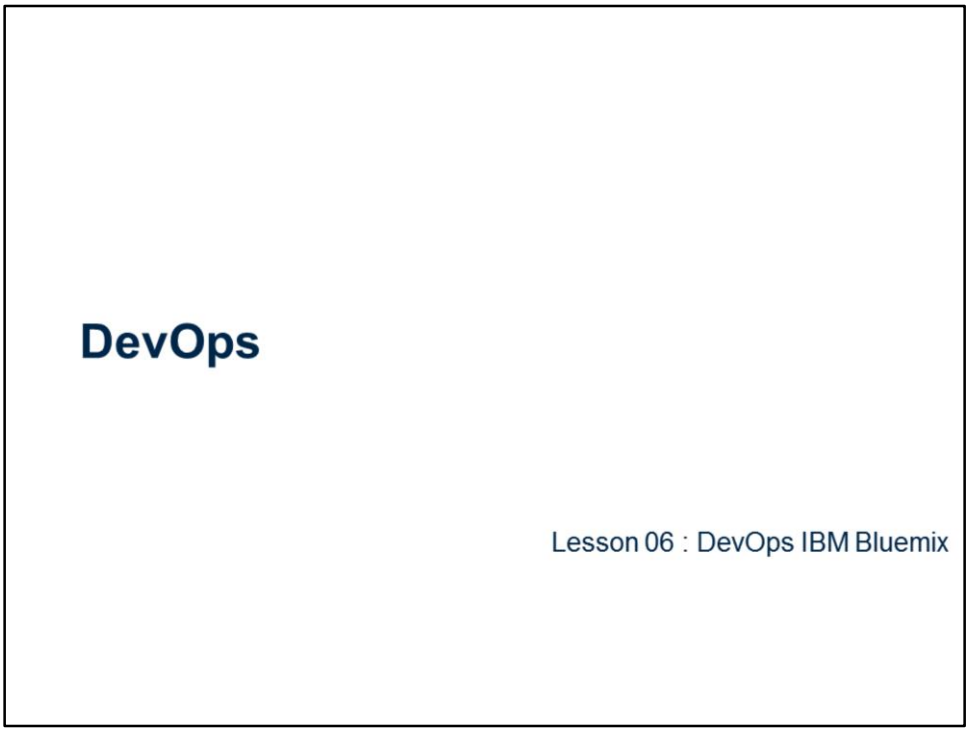
Instructor Notes:

Add instructor notes here.



Instructor Notes:

Add instructor notes here.

Lesson Objectives

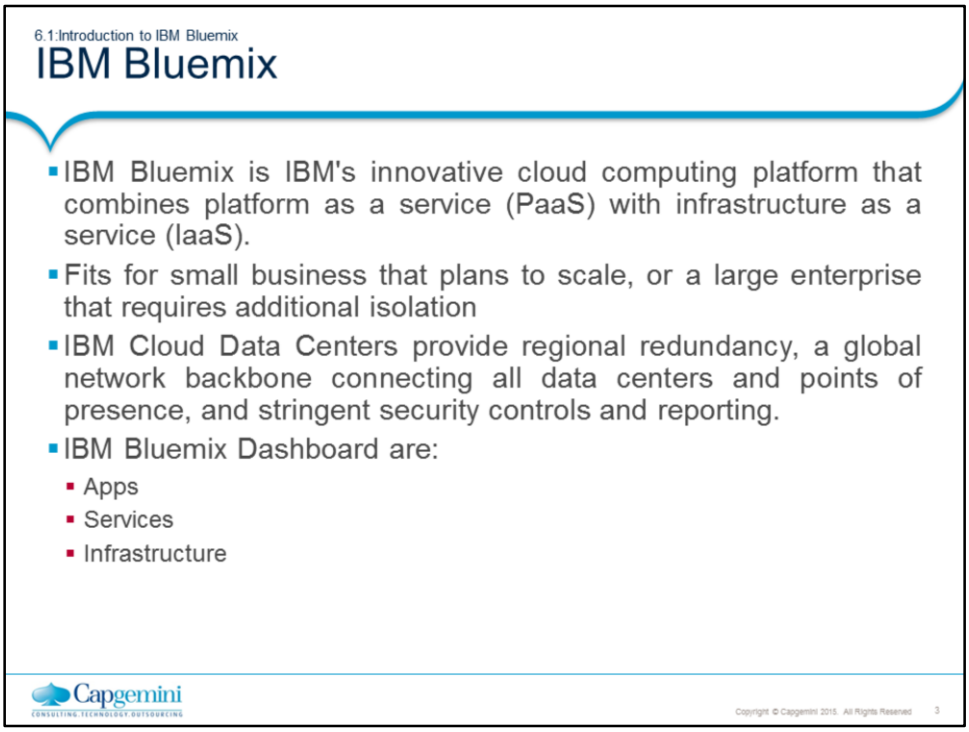
- Introduction to IBM Bluemix
- Working with Bluemix –CLI & Eclipse
- Bluemix with DevOps
- Other Tools of DevOps

Capgemini
CONSULTING. TECHNOLOGY. OUTSOURCING

 2

Instructor Notes:

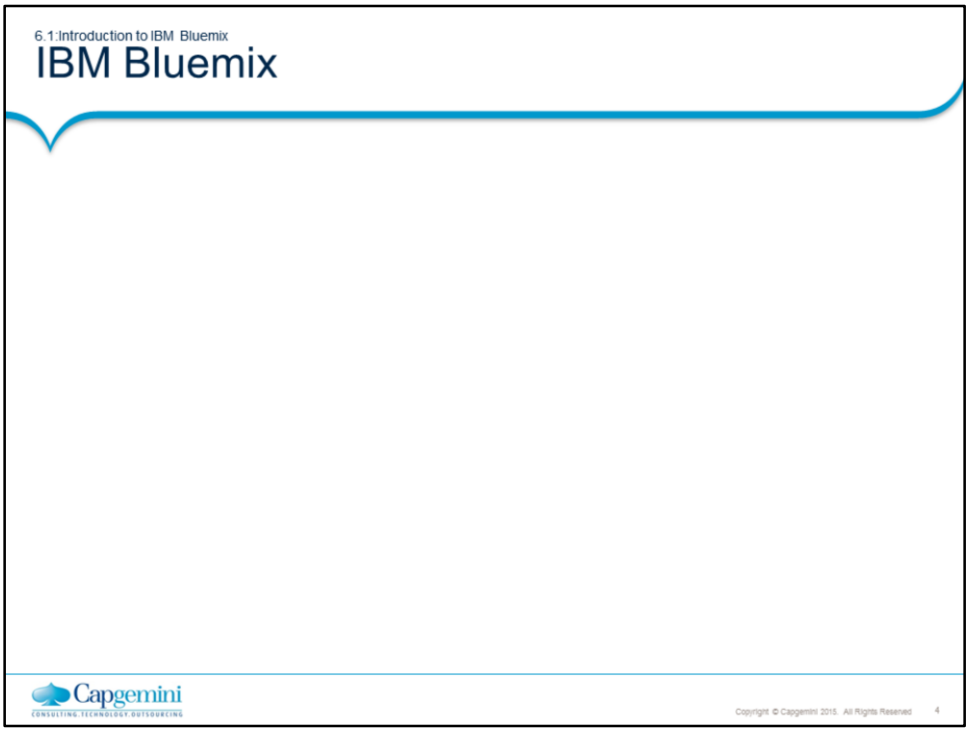
Add instructor notes here.



Apps
The Apps dashboard provides everything you need to get your apps up and running, and to manage those apps while they run. Bluemix provides various boilerplates and runtimes:
A boilerplate is a template for an application and its associated runtime environment and predefined services for a specific domain.
A runtime is the set of resources that is used to run an app, provided as containers for different types of apps.
Bluemix provides various ways for you to run your apps, for example, Cloud Foundry and IBM® Bluemix Container Service. Use IBM Bluemix Container Service to run Docker containers in a hosted cloud environment on Bluemix.
You can use IBM® Bluemix® OpenWhisk for distributed, event-driven computing. OpenWhisk runs application logic in response to events or direct invocations from web or mobile apps over HTTP.
You can use Bluemix Mobile services to incorporate pre-built, managed, and scalable cloud services into your mobile apps.
Services
The Services dashboard provides access to the Bluemix services available from IBM® and third-party providers. These include Watson, Internet of Things, Analytics, Mobile, and DevOps services:
Deliver innovative new applications faster and cheaper with just the right features using IBM DevOps services and the Bluemix Garage Method. When you adopt DevOps practices and create a culture of innovation and agility, you can use iterative practices and change direction in response to the market.
Blockchain is a peer-to-peer distributed ledger technology for a new generation of transactional applications that establishes trust, accountability, and transparency while streamlining business processes.
Watson gives your apps the power of cognitive computing with a full suite of speech, vision, and data APIs. Solve your most complex business problems by deploying a cognitive platform with Watson services.
IBM enables you to do more with rich, integrated cloud databases and Data & Analytics services.
The IBM Internet of Things service lets your apps communicate with, and consume data that is collected by, your connected devices, sensors, and gateways. Our recipes make it easy to get devices connected to our Internet of Things cloud. Your apps can then use our real-time and REST APIs to communicate with your devices and consume the data you've set them up to collect.
IBM offers a mobile backend infrastructure where you can build multiplatform, native, or hybrid apps while also being able to monitor and test them. You can also enhance your app with analytics, security, user insight, and continuous delivery.
Bluemix also provides experimental services that you can try out. To learn about service types and availability, see Bluemix services
Infrastructure

Instructor Notes:

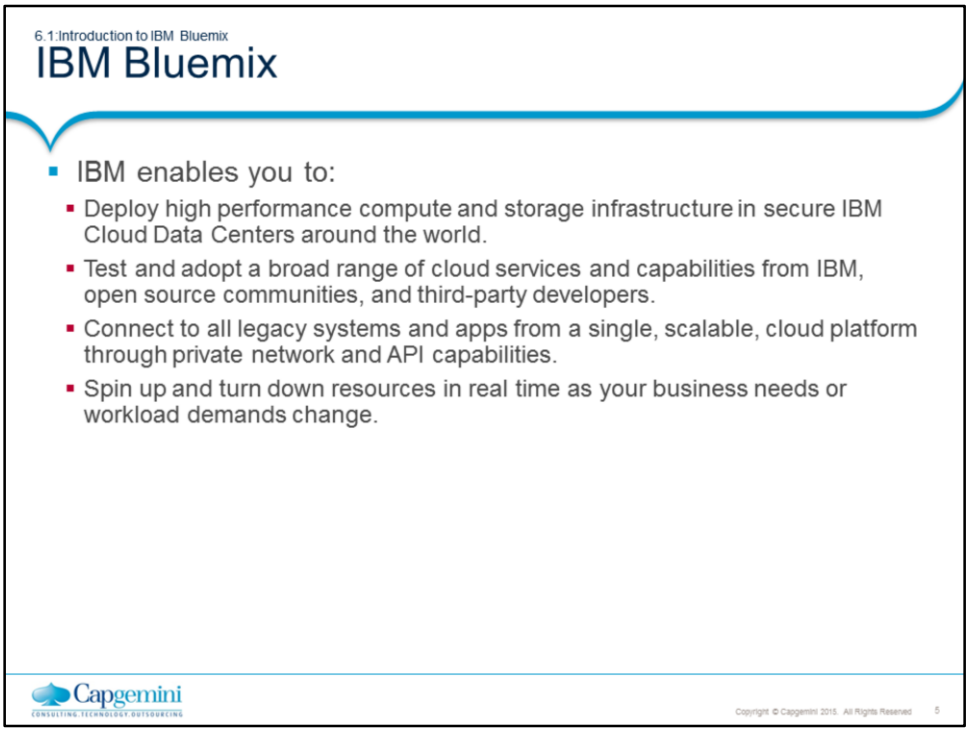
Add instructor notes here.



The Infrastructure dashboard provides various services to fit your cloud infrastructure needs.
Bluemix infrastructure provides the highest performing cloud infrastructure available. Bluemix infrastructure is one platform, which takes data centers around the world that are full of the widest range of cloud computing options, then integrates and automates everything. IBM Cloud Data Centers are filled with first class computing, storage, and networking gear. Each location is built, outfitted, and operated in the same way, so you get exactly the same capabilities and availability anywhere where we are present. Locations are connected by the industry's most advanced network-in-a-network, which integrates distinct public, private, and internal management networks to deliver lower total networking costs, better access, and higher speed. Also, the data centers and network share a single proprietary management system. One management tool lets you control everything--every bare metal server, virtual server, and storage device--all accessible by API, portal, and mobile applications.
Bluemix infrastructure offers powerful bare metal servers and flexible virtual servers in a single seamless platform. All are provided on demand and billed on monthly or hourly terms. Bare metal servers provide the raw horsepower for your processor-intensive and disk I/O-intensive workloads and can be configured to your exact specifications. Virtual servers allow for high speed of deployment, flexible scalability, and pay-as-you-go billing. For high performance computing, give your cloud a boost with graphics processing unit (GPU) servers, available by the hour or monthly.
Bluemix infrastructure offerings are connected to a three-tiered network, segmenting public, private, and management traffic. Infrastructure on a customer's Bluemix account might transfer data between such infrastructure across the private network at no cost. Infrastructure offerings, such as bare metal servers, virtual servers, and cloud storage, connect to other applications and services in the Bluemix catalog, such as Watson services, containers, or runtimes, across the public network. Data transfer between those two types of offerings is metered and charged at standard public network bandwidth rates.
Using the B

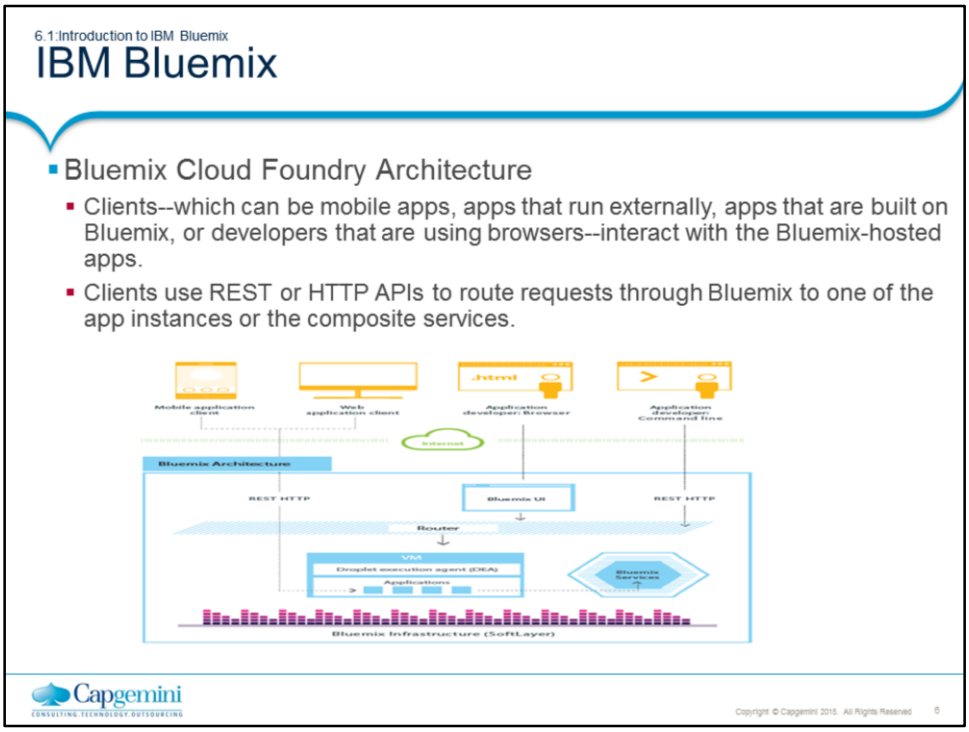
Instructor Notes:

Add instructor notes here.



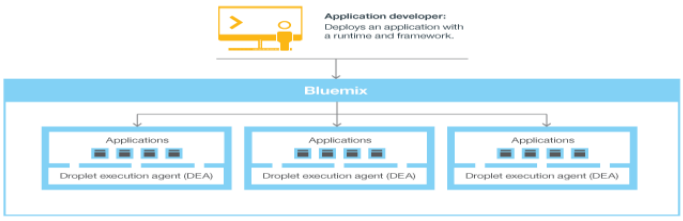
Instructor Notes:

Add instructor notes here.



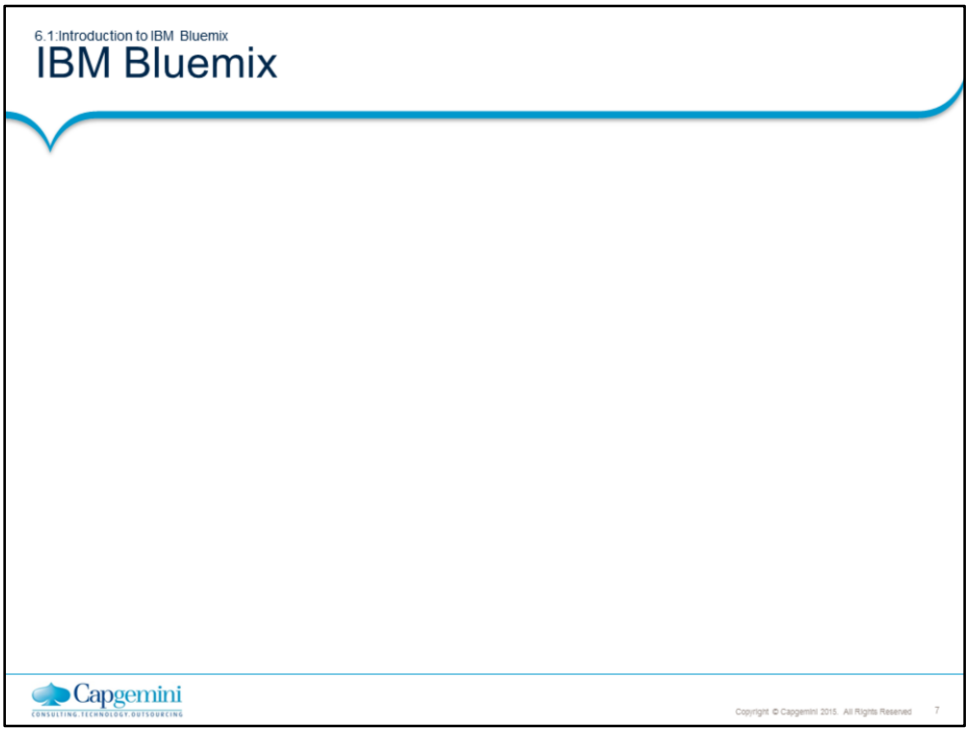
How Bluemix cloud Foundry works
the operating system and infrastructure layers when running apps on Bluemix in Cloud Foundry. Layers such as root filesystems and middleware components are abstracted so that you can focus on your application code. However, you can learn more about these layers if you need specifics on where our app is running.

When we deploy an app to Bluemix Cloud Foundry, we must configure Bluemix with enough information to support the app.
For a mobile app, Bluemix contains an artifact that represents the mobile app's back end, such as the services that the mobile app uses to communicate with a server.
For a web app, we must ensure that information about the runtime and framework is communicated to Bluemix, so that Bluemix can set up the appropriate execution environment to run the app.
Each execution environment, including both mobile and web, is isolated from the execution environment of other apps. The execution environments are isolated even though these apps are on the same physical machine. The following figure shows the basic flow of how Bluemix Cloud Foundry manages the deployment of apps:

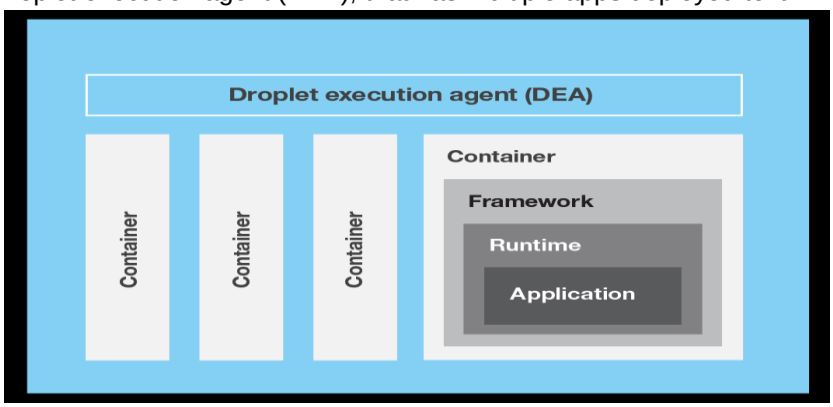


Instructor Notes:

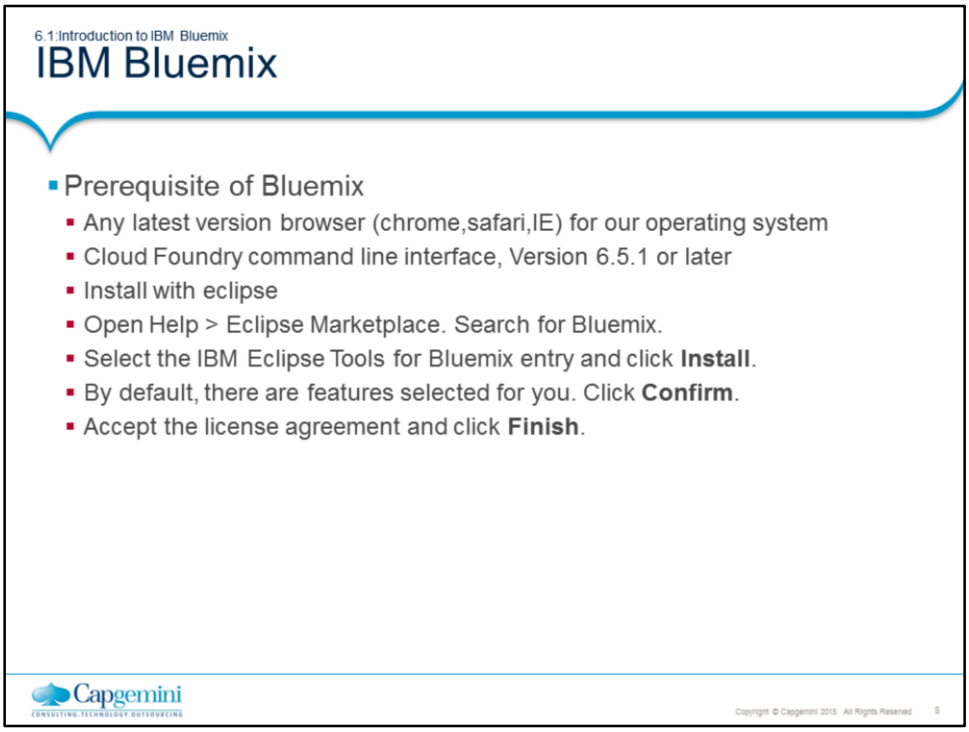
Add instructor notes here.



When you create an app and deploy it to Bluemix Cloud Foundry, the Bluemix environment determines an appropriate virtual server to send the app, or the artifacts that the app represents, to. For a mobile app, a mobile back-end projection is created on Bluemix. Any code for the mobile app running in the cloud eventually runs in the Bluemix environment. For a web app, the code running in the cloud is the app itself that the developer deploys to Bluemix. The determination of the virtual server is based on several factors, including:
The load already on the machine Runtimes or frameworks supported by that virtual server. After a virtual server is chosen, an application manager on each virtual server installs the appropriate framework and runtime for the app. Then, the app can be deployed into that framework. When the deployment completes, the application artifacts are started.
The following figure shows the structure of a virtual server, also known as Droplet execution agent (DEA), that has multiple apps deployed to it:



Instructor Notes:

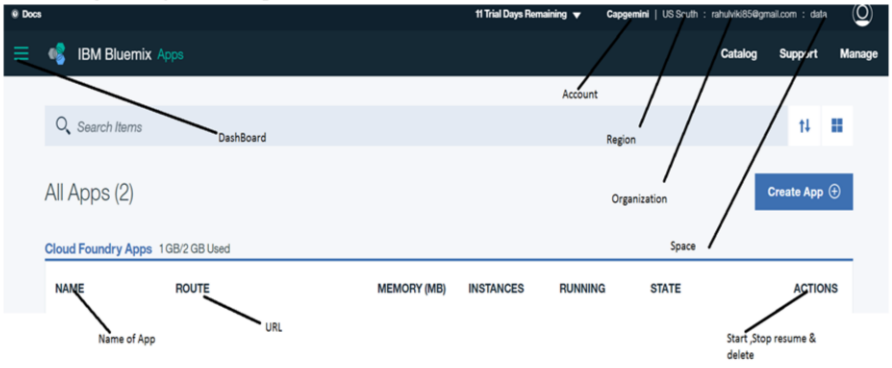


Instructor Notes:

6.1:Introduction to IBM Bluemix

IBM Bluemix

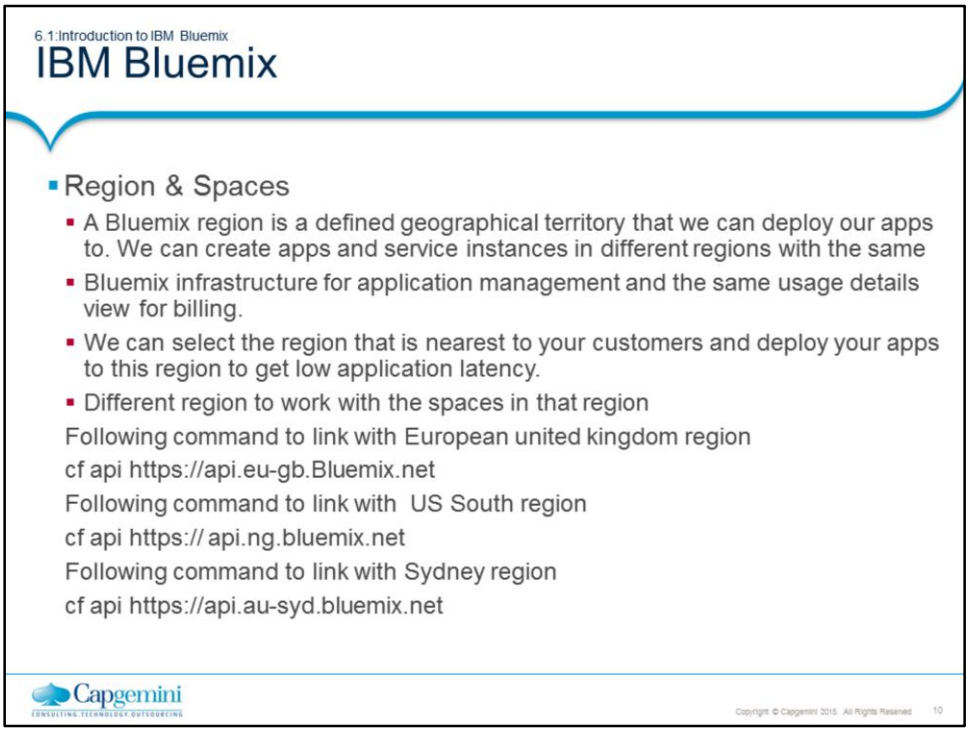
- Creating Account in BlueMix
  - Go https://console.ng.bluemix.net/ & create bluemix account
  - Give your Space, Region



Capgemini
CONSULTING. TECHNOLOGY. OUTSOURCING

 9

Instructor Notes:



Instructor Notes:

6.2:Working with Bluemix

IBM Bluemix

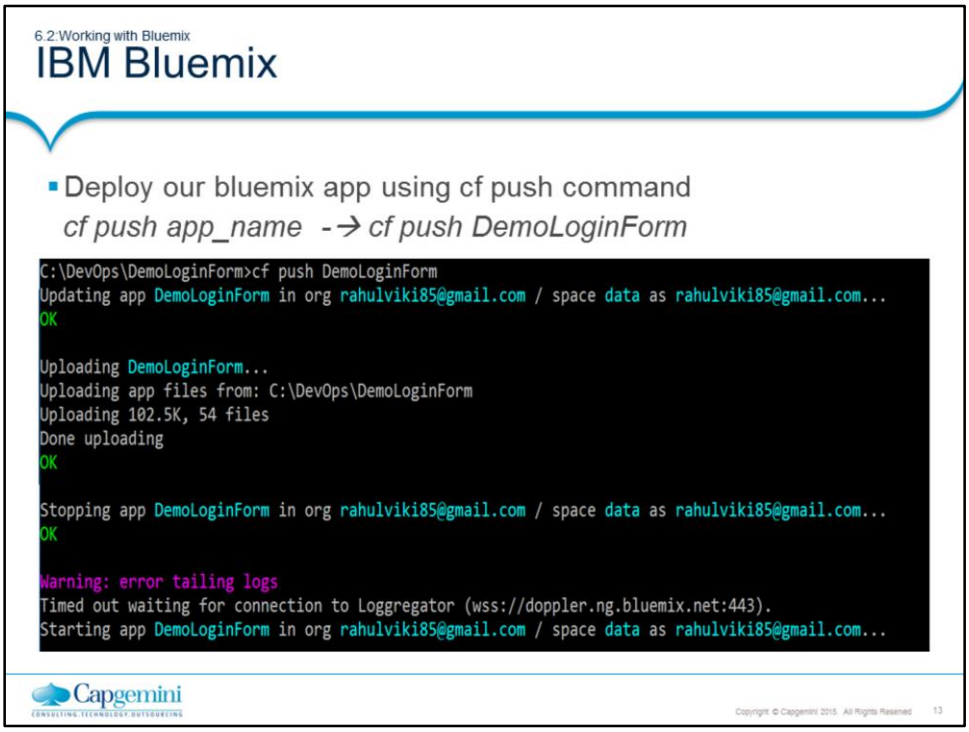
- Working with CLI
  - Install CLI
  - Open Command prompt ,write cf

  - Connect and log in to Bluemix.

cf api https://api.ng.bluemix.net

Instructor Notes:

Instructor Notes:

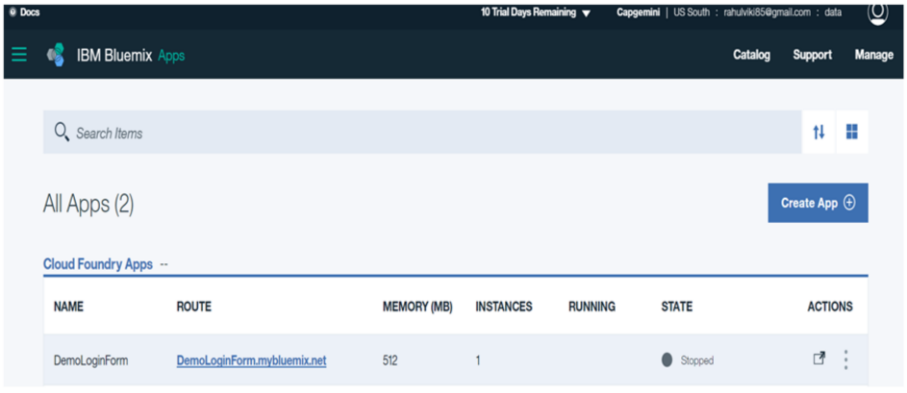


Instructor Notes:

6.2:Working with Bluemix

IBM Bluemix

- DemoLoginForm uploaded on https://console.ng.bluemix.net/dashboard/apps



Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

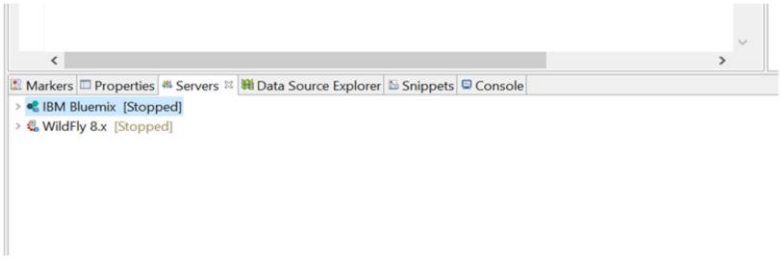
 14

Instructor Notes:

6.2:Working with Bluemix

IBM Bluemix

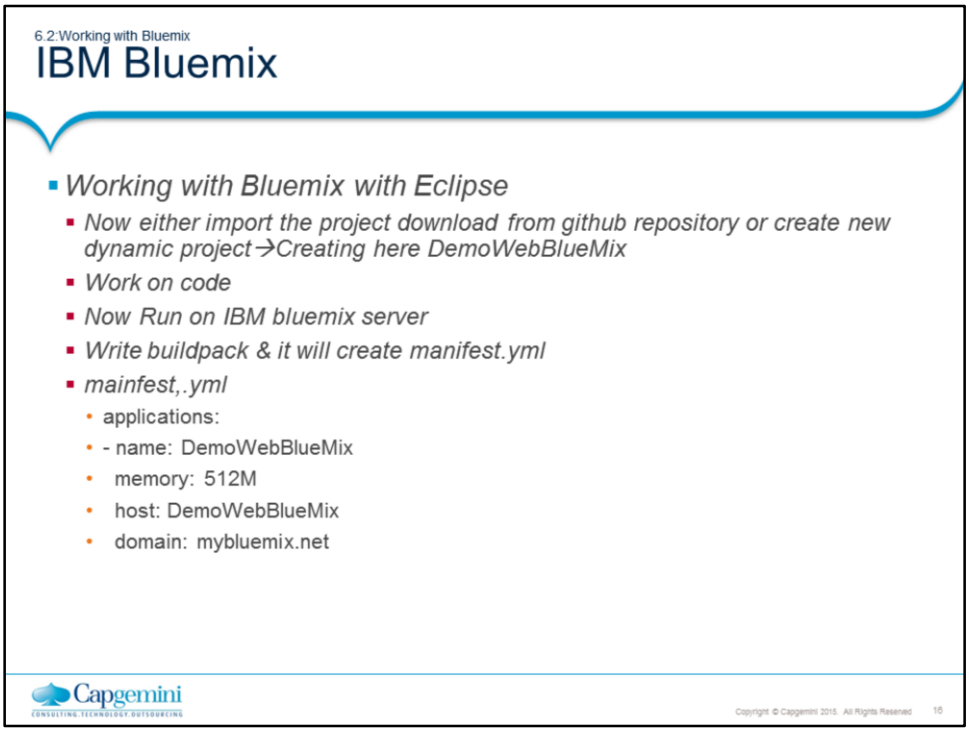
- *Working with Bluemix with Eclipse*
  - *Download the code from Git Repository*
  - *Open Eclipse → Go to help →go to marketplace →install bluemix*
  - *Create a server IBM bluemix*
  - *Check on server tab in eclipse*



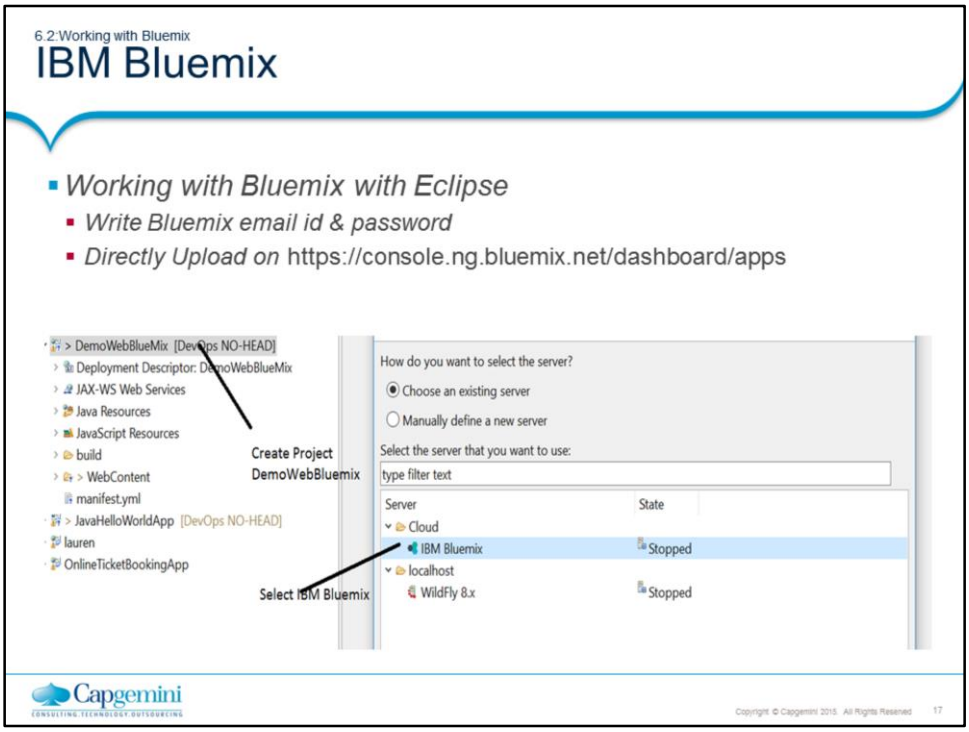
Capgemini
CONSULTING. TECHNOLOGY. OUTSOURCING

 15

Instructor Notes:



Instructor Notes:

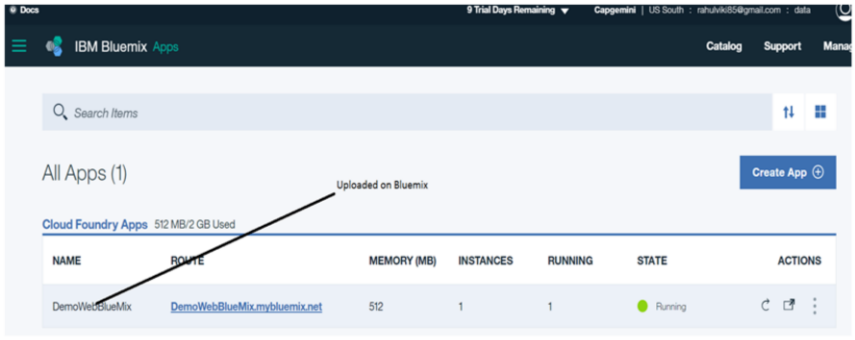


Instructor Notes:

6.2:Working with Bluemix

IBM Bluemix

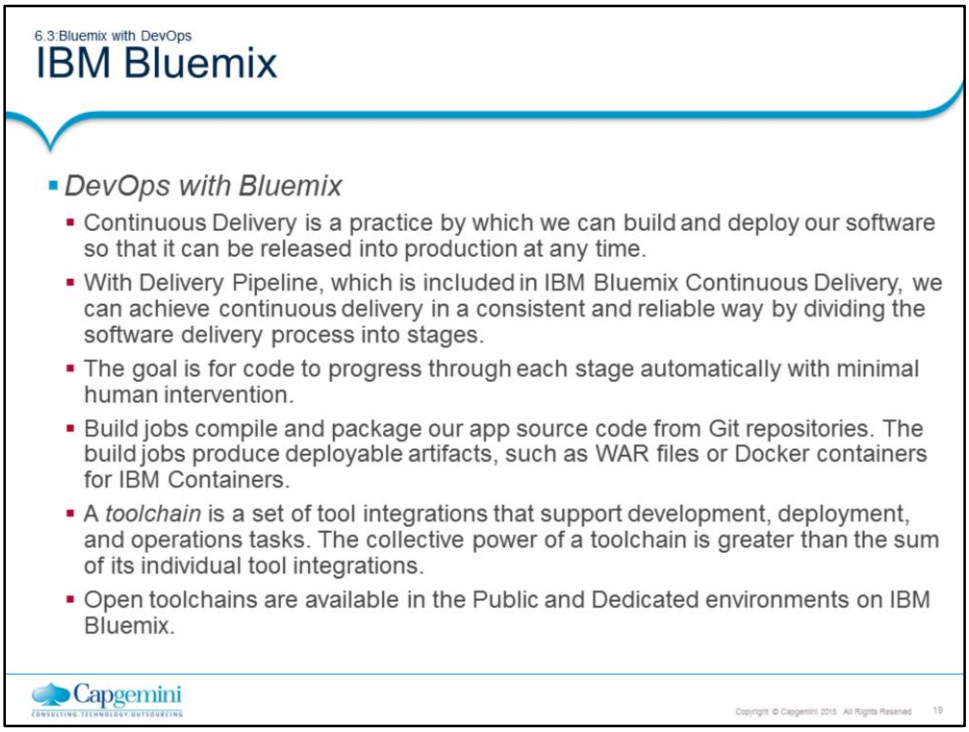
- *Working with Bluemix with Eclipse*
  - *Our project deployed on bluemix dashboard→ https://console.ng.bluemix.net/dashboard/apps*



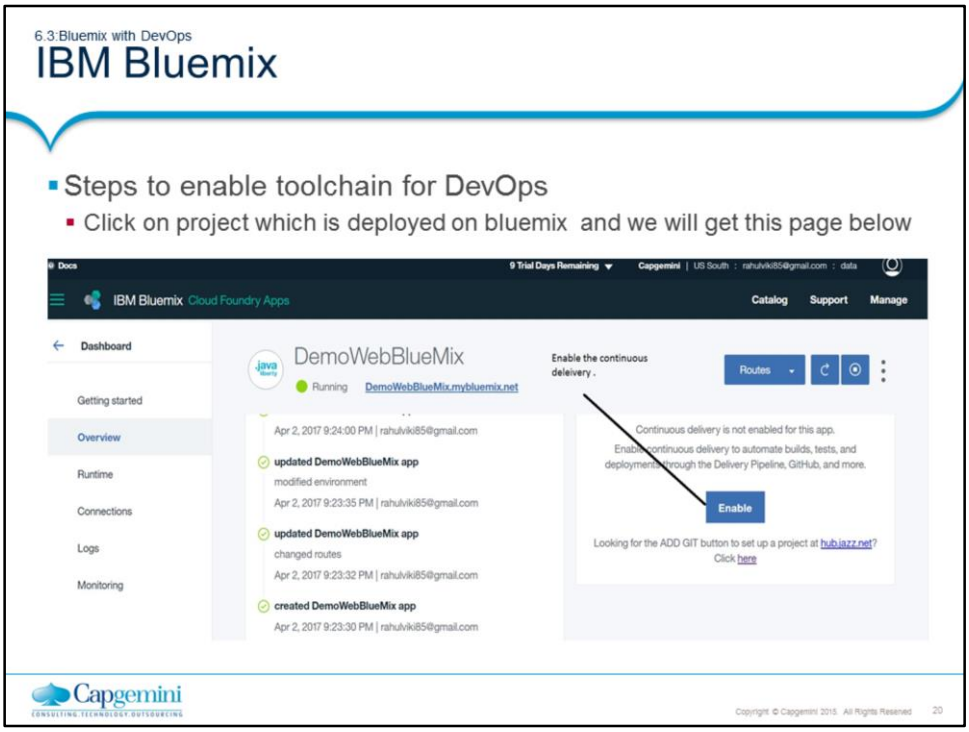
Capgemini CONSULTING.TECHNOLOGY.OUTSOURCING

 18

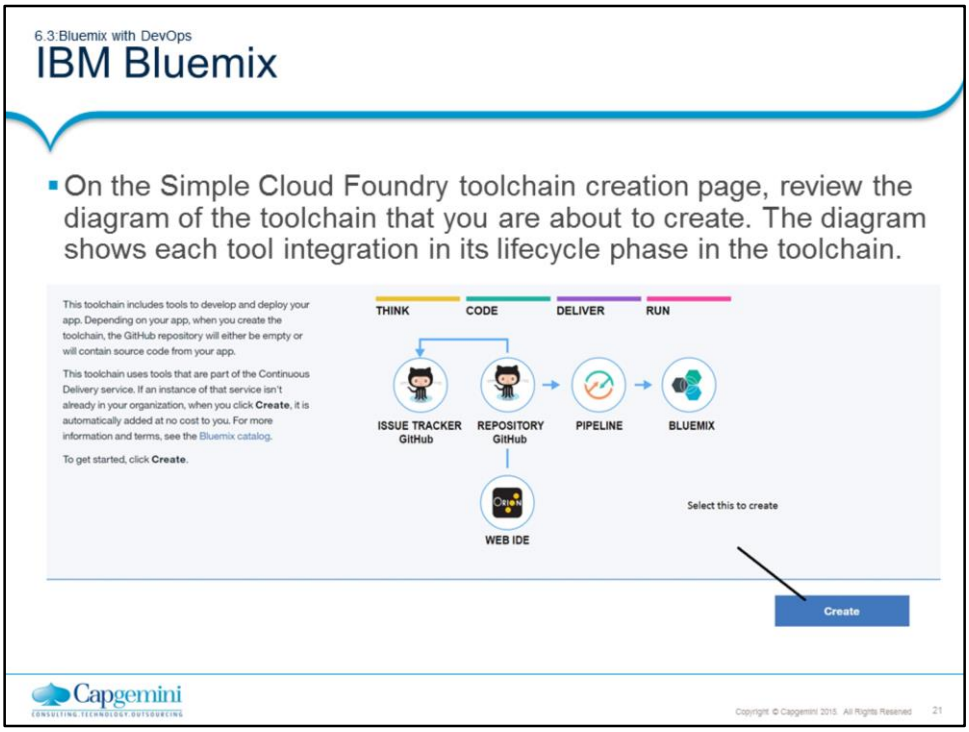
Instructor Notes:



Instructor Notes:



Instructor Notes:

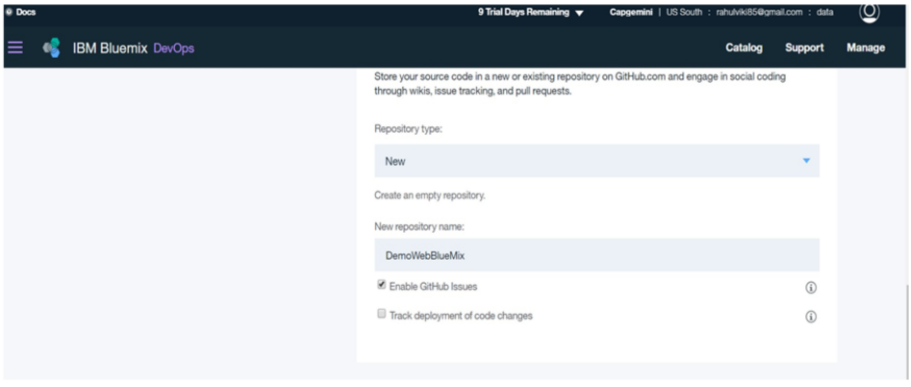


Instructor Notes:

6.3:Bluemix with DevOps

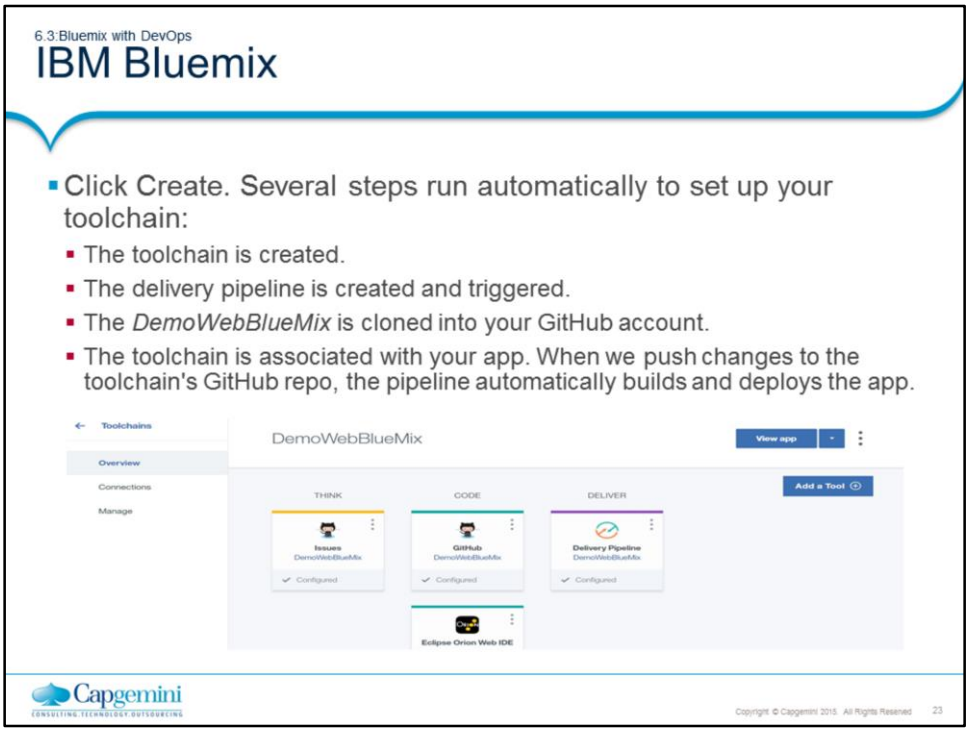
IBM Bluemix

- If we haven't authorized with GitHub, we are prompted to do so. Click Authorize and follow the instructions to link your Bluemix account to a GitHub account.



Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

Instructor Notes:

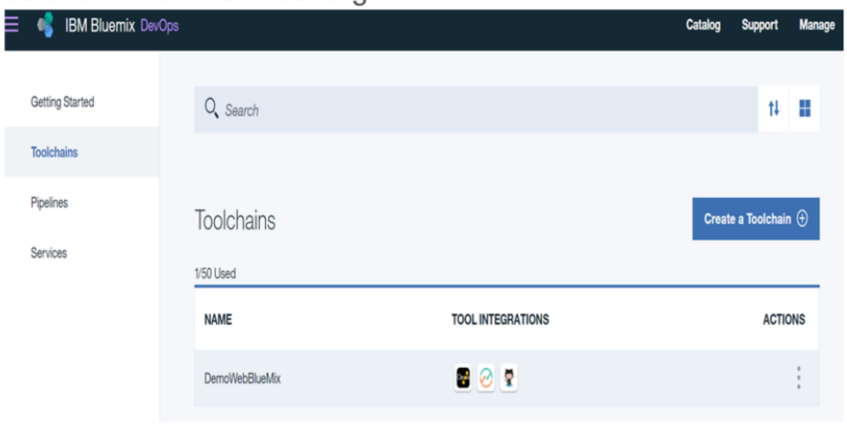


Instructor Notes:

6.3:Bluemix with DevOps

IBM Bluemix

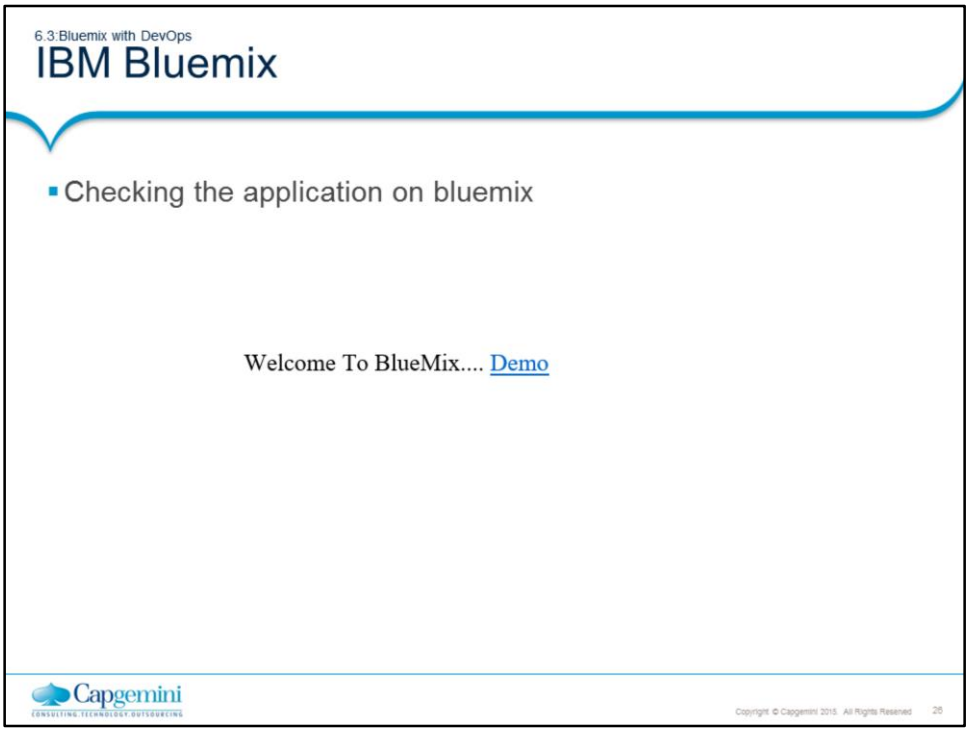
- Return to the toolchain page , the Toolchains page displays all the toolchains that are in our org.



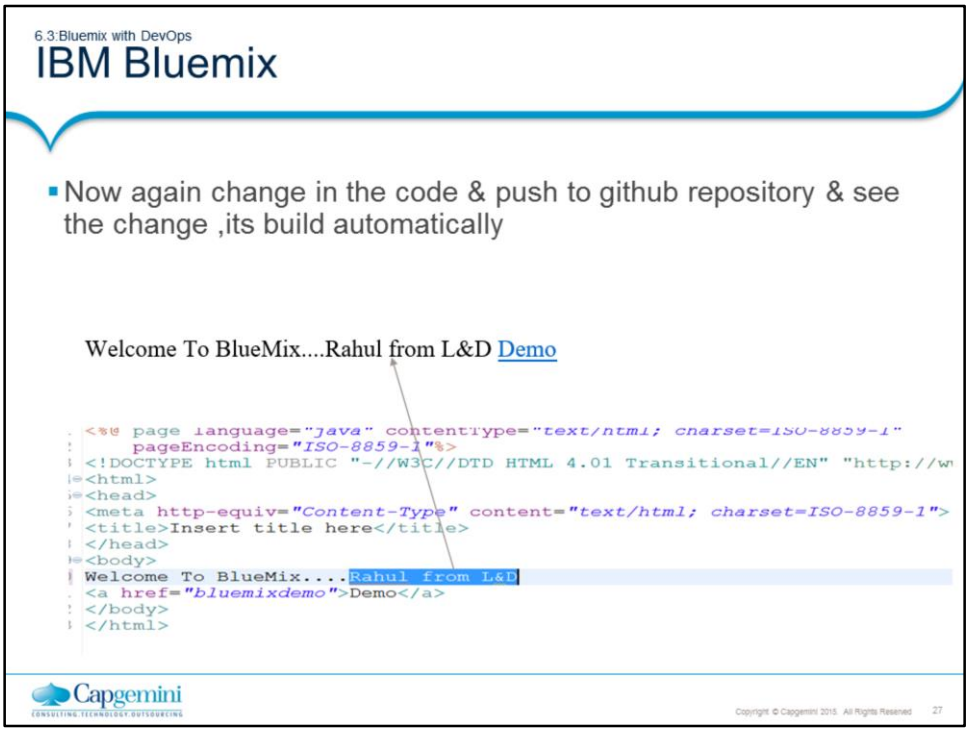
Capgemini
CONSULTING. TECHNOLOGY. OUTSOURCING

Instructor Notes:

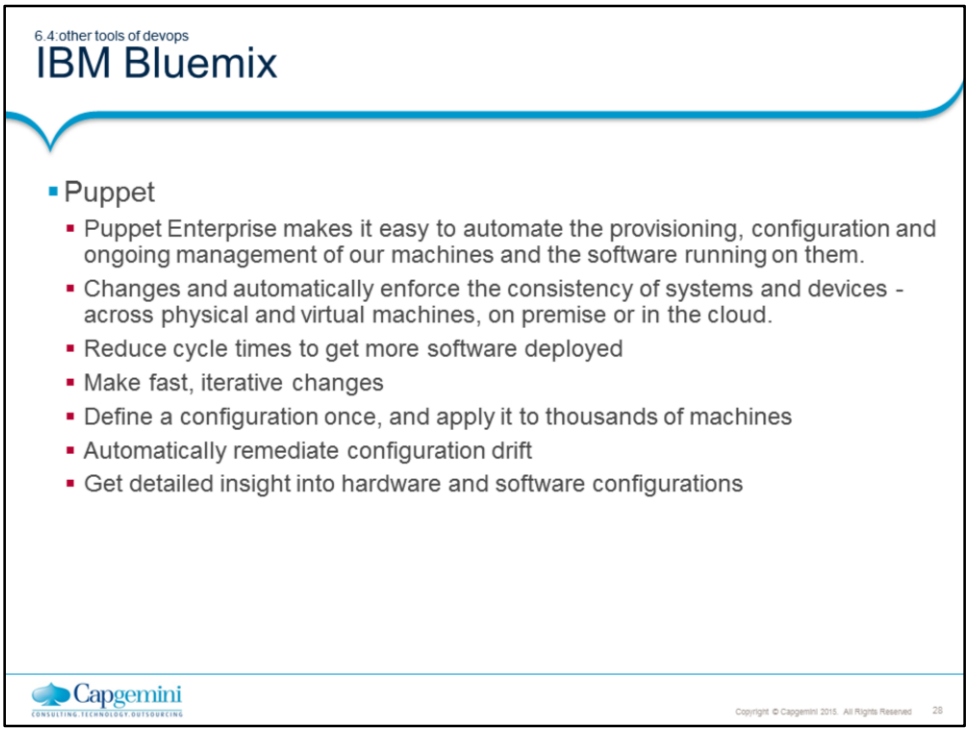
Instructor Notes:



Instructor Notes:



Instructor Notes:



Instructor Notes:

Chef is a powerful automation platform that transforms infrastructure into code. Whether you're operating in the cloud, on-premises, or in a hybrid environment, Chef automates how infrastructure is configured, deployed, and managed across your network, no matter its size.

You create and test your code on your workstation before you deploy it to other environments. Your workstation is the computer where you author your cookbooks and administer your network. It's typically the machine you use everyday. It can be any OS you choose, whether it's Linux, Mac OS, or Windows.

You'll need to install a text editor (whatever you like) to write code and Chef DK to get the tools to test your code. The primary testing tools you'll use are Foodcritic, Test Kitchen and ChefSpec. With them, you can make sure your Chef code does what you intended before you deploy it to environments used by others, such as staging or production.

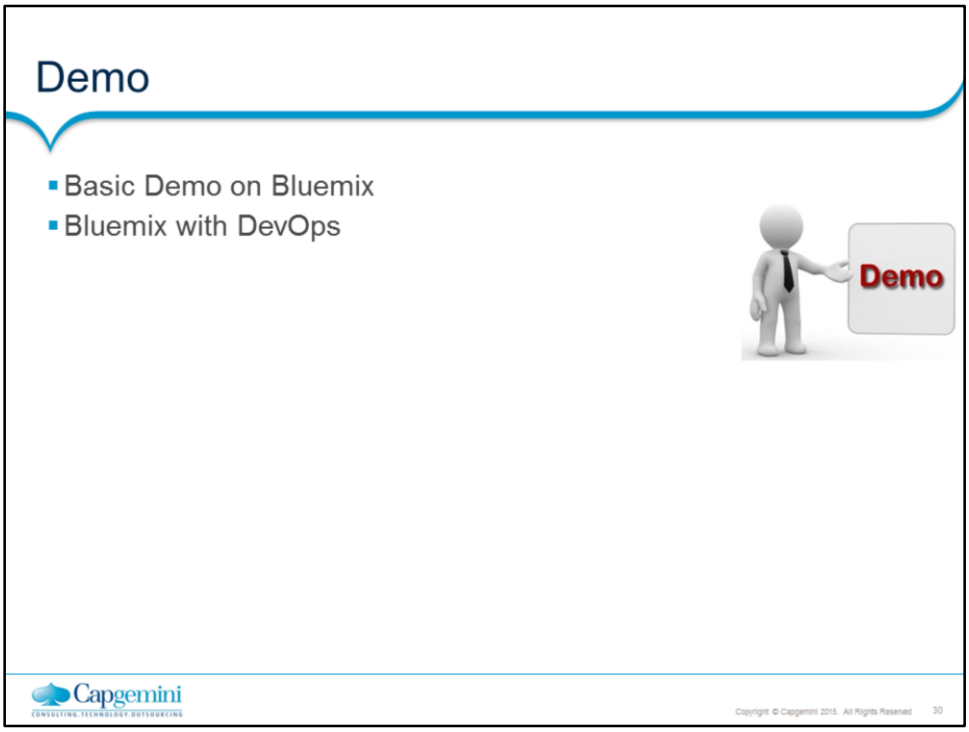
When you write your code, you use resources to describe your network. A resource corresponds to some piece of infrastructure, such as a file, a template, or a package. Each resource declares what state a part of the system should be in, but not how to get there. Chef handles these complexities for you. Chef provides many resources that are ready for you to use. You can also write your own resources if you need to.

A Chef recipe is a file that groups related resources, such as everything needed to configure a web server, database server, or a load balancer. A Chef cookbook provides structure to your recipes and, in general, helps you stay organized.

The Chef DK includes other useful tools such as InSpec, which is an open-source testing framework with a language for specifying compliance, security and policy requirements. Command-line tools include chef-solo, which runs locally and mimics an actual Chef server, knife for interacting with the Chef server, and chef for interacting with your local chef-repo.

Instructor Notes:

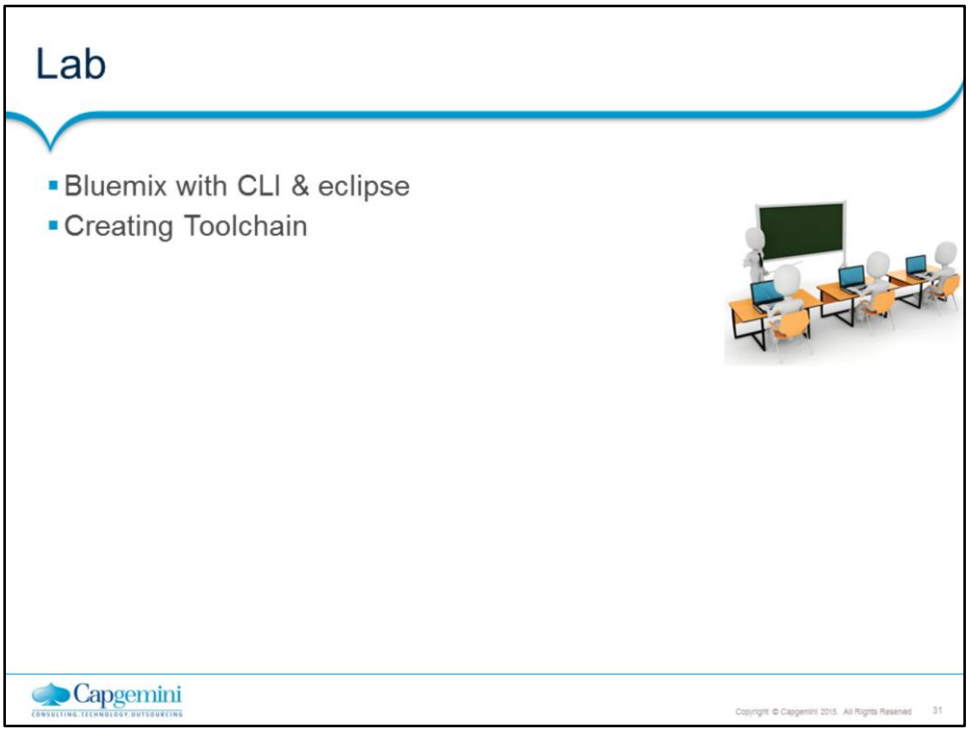
Add instructor notes here.



Add the notes here.

Instructor Notes:

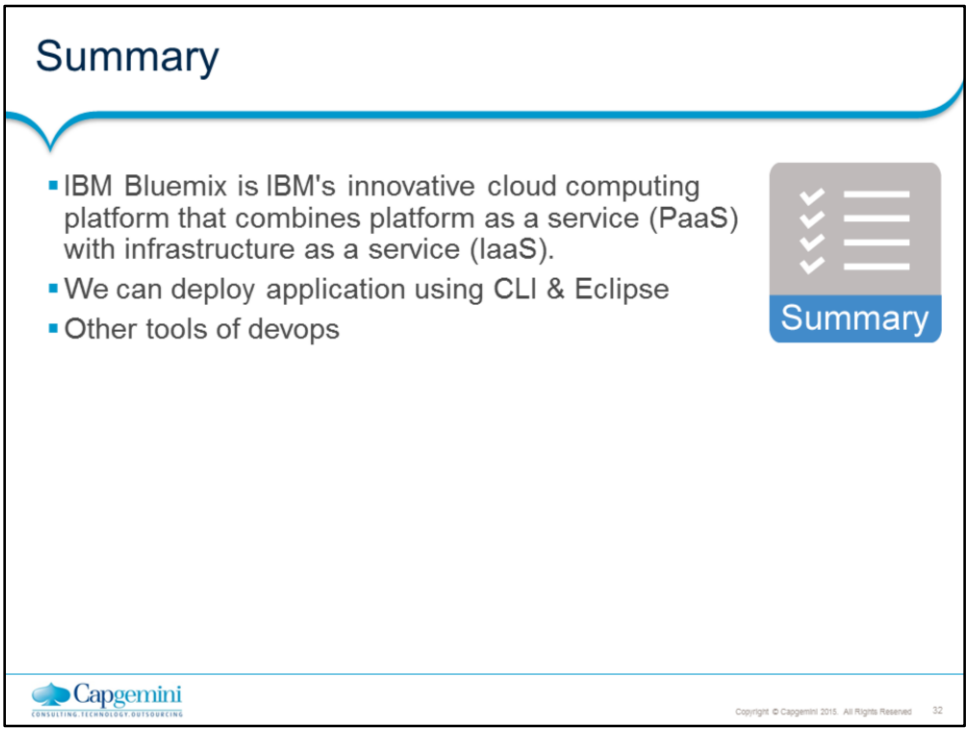
Add instructor notes here.



Add the notes here.

Instructor Notes:

Add instructor notes here.



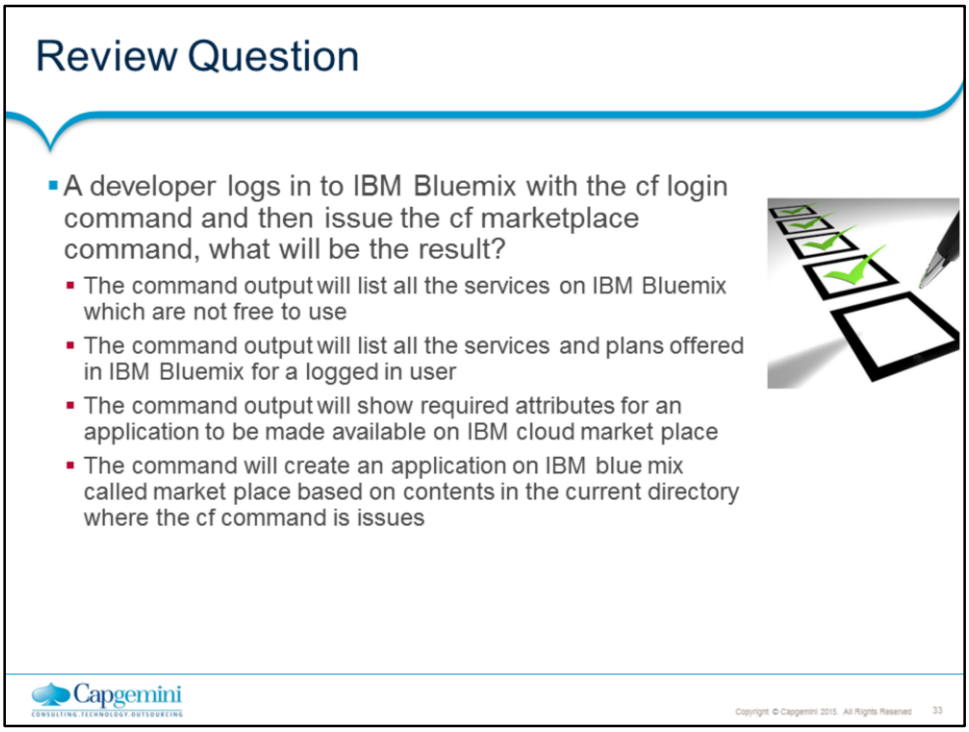
Add the notes here.

Instructor Notes:

Q1. The command output will list all the services and plans offered in IBM Bluemix for a logged in user

Q2. Application name

Q3. By changing the region in the IBM Bluemix web console and redeploying the application and services



Add the notes here.

Instructor Notes:

Add instructor notes here.

Review Question

- In IBM BluemixPaaS a developer wants to customize application deployment properties, which field is mandatory for manifest.yml?
  - Host
  - Disk Quota
  - Application name
  - Environment Name
- In IBM BluemixPaaS how can developers redeploy an application from one Bluemix region to another region
  - By changing the route of the application
  - By changing the environment variables in VCAP service
  - By updating the user profile and redeploying the application and services
  - By changing the region in the IBM Bluemix web console and redeploying the application and services

Capgemini
CONSULTING. TECHNOLOGY. OUTSOURCING

 34

Add the notes here.