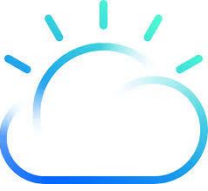


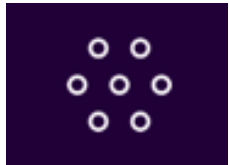
# IBM Cloud Overview

# Agenda



- Compute options
  - Infrastructure
  - Cloud Foundry
  - IBM Cloud Function
- IBM Cloud Services
  - Watson Services
  - Watson Studio
- IBM Cloud Account
  - Promo Code
  - Prepare environment

# IBM offers the complete spectrum of cloud deployment models



**Choice with consistency**



**Hybrid integration**



**DevOps productivity**



**Powerful, accessible data and analytics**



**Cognitive solutions**

## 1 | Public

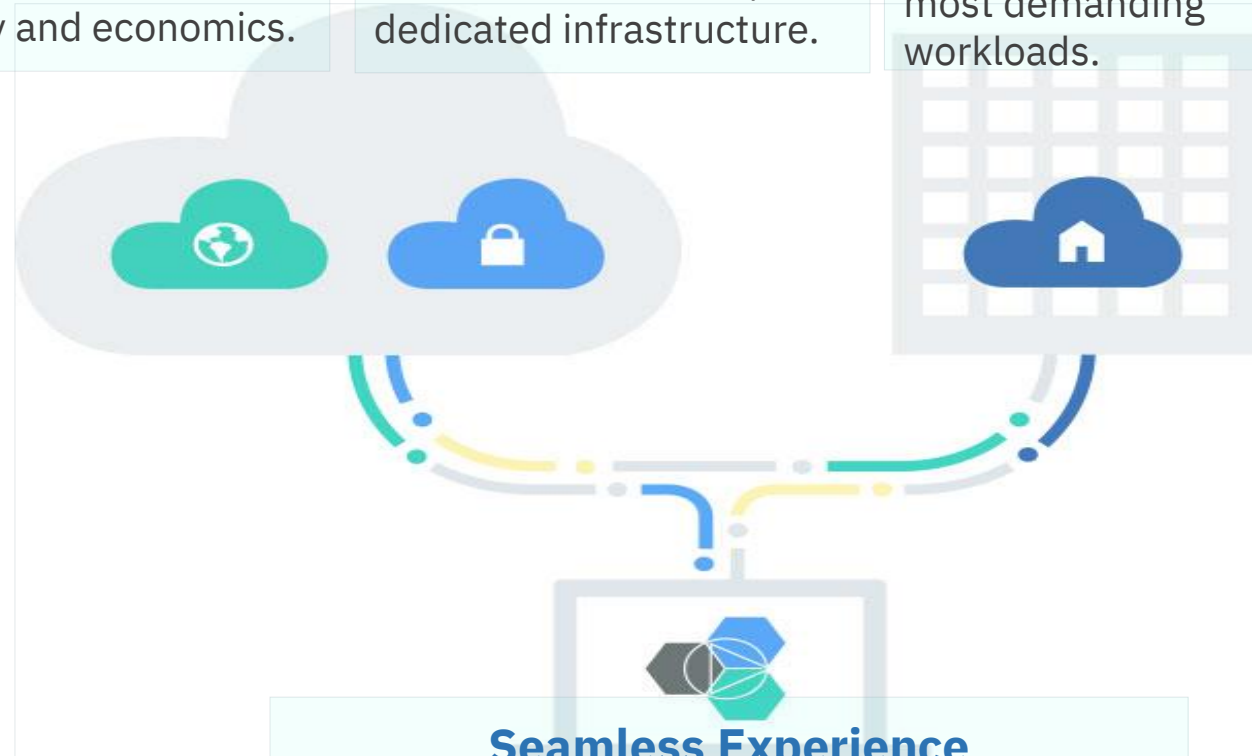
Maximize on cloud agility and economics.

## 2 | Dedicated

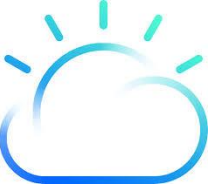
Public cloud benefits, with dedicated infrastructure.

## 3 | Private

Behind the firewall for the most demanding workloads.



# Flexible compute options



## Bare Metal

- *Dedicated Compute*
- *High Memory*
- *Intensive Disk I/O*



## Virtual Servers

- *Isolation*
- *Familiar*
- *Full Operating System Control*



## Containers

- *Portable*
- *Flexible*
- *Light-weight*
- *Orchestration*



## Cloud Foundry Apps

- *Speed*
- *Manage code, not infrastructure*
- *Multiple runtime choices*



## Cloud Functions

- *Serverless*
- *Event-Driven*
- *Short-lived*

Infrastructure

Platform

PERFORMANCE &  
CONTROL

PORTABILITY

DEVELOPMENT SPEED

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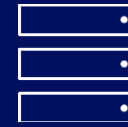
# Compute Infrastructure

## SAP Certified Servers



Build, deliver, and run SAP applications in the cloud

## Bare Metal Servers



Raw IaaS horsepower for processor-intensive and disk I/O-intensive workloads

## Virtual Servers



Fast deployment when resources are needed on the fly

## GPU Computing



Handle complex, compute-intensive workloads, including analytics, graphics, and AI

## POWER Servers



Develop, test, and run Linux applications

## Server Software



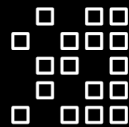
Operating systems to control panels to simplify IaaS administration



## Block and File



## Object



## Mass Data Migration



## Backup



## Mass Storage Servers

For when you need...

- File sharing
- Local archiving
- Data protection
- Data bases
- Email servers
- RAID
- Virtual machines

- Huge data storage
- API driven web applications support
- Big archived backups
- Cost effective dynamic data accessibility

- To move TBs of data to the cloud
- Sensitive data solutions
- Economical storage to cloud pricing
- Limited internet connection support
- Data center decommission strategy

- Copies and instances of data
- Full control over maintenance, management, retrieval and restoration
- Customizable choices
- Turnkey or custom-built options

- Private SAN/NAS storage
- Unlimited access
- Data-intensive, redundant power solutions
- High performance and functionality

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# IBM Kubernetes Service

Combining Docker and Kubernetes to deliver powerful tools, an intuitive user experience, and built-in security and isolation to enable rapid delivery of applications - all while leveraging IBM Cloud Services including cognitive capabilities from Watson.

<https://www.ibm.com/cloud/container-service>

Kubernetes Certified Service Provider  
Kubernetes Technology Partner  
Kubernetes Service Providers



# IBM Cloud Kubernetes Service



## All Categories

🔍 Search

Filter

## Infrastructure

Compute

Storage

Network

Security

Containers >

VMware

Get started by creating a Kubernetes cluster, or manage your container images in the registry.



### Kubernetes Cluster

Deploy highly available apps to a cluster of compute hosts

Lite

IBM



### Container Registry

Store and distribute Docker images by using this managed private registry. [Make inform](#)

Lite

IBM

<https://developer.ibm.com/code/technologies/container-orchestration/>

## Related Code Patterns



### Cloud-host a graph database using Kubernetes

Learn how to quickly host OrientDB on the IBM Cloud Container Service by using Kubernetes APIs.



### Implement computer vision for PlayerUnknown's Battlegrounds live streams

PUBG Rotisserie performs OCR on Twitch live streams to identify which streams have only a handful of players left and are close to the final moments of play.



### Assemble a pizza-ordering chatbot dialog

The new Watson Conversation Slots feature allows you to create a complex dialog with fewer nodes. Using slots in this example, we can define the fields in one dialog node and handle the logic in a single node.



IBM Cloud Container Service

# Managed Clusters on IBM Cloud

Catalog

Docs

Support

Manage

Region

Germany

Cluster type

Free

New to Kubernetes? Create a cluster with 1 worker node to explore the capabilities.

Free

Standard

Ready for production? Create a fully-customizable cluster with your choice of hardware isolation.

Starting from \$0.11 hourly

Cluster details

Location

fra02

Kubernetes version

1.10.1

Latest

1.8.11

Stable

1.9.7

Stable, Default

1.7.16

Stable

Order Summary

b2c.4x16 - 4 CPUs, 16 GB RAM

3 worker nodes

\$0.88 / hr

IP Allocation

\$16.00

Total:

\$0.88 / hr

estimated

Monthly charge\*

\$16.00

\*In order to provide proper networking we must provision a set of IP addresses

Create Cluster

Hardware isolation

Virtual - Shared

Virtual - Dedicated

Bare Metal

Machine type

u2c.2x4

2 CPUs

4 GB RAM

\$0.11 / hr

b2c.4x16

4 CPUs

16 GB RAM

\$0.29 / hr

b2c.16x64

16 CPUs

64 GB RAM

\$0.98 / hr

b2c.32x128

32 CPUs

128 GB RAM

\$1.79 / hr

b2c.56x242

56 CPUs

242 GB RAM

\$2.82 / hr

Encrypt local disk

Worker nodes

3

Private VLAN

1171403-1703-bcr01a.fra02

Public VLAN

1171401-1570-fcr01a.fra02

Finalize and create cluster

Almost done! Give your cluster a unique name.

Order Summary

b2c.4x16 - 4 CPUs, 16 GB RAM

3 worker nodes

\$0.88 / hr

IP Allocation

\$16.00

Total:

\$0.88 / hr

estimated

Monthly charge\*

\$16.00

\*In order to provide proper networking we must provision a set of IP addresses

Create Cluster

Need help?

Cookie Preferences

11

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
# Cloud Foundry : Instant Runtimes







**Cloud Foundry** is an open source PaaS that lets developers focus on their application code and let the platform handle the rest (runtime, scaling, networking, operating system).



**IBM Cloud** extends Cloud Foundry with a number of managed runtimes and services, enterprise-grade DevOps tooling, and a seamless overall developer experience.



Deploy your app without managing underlying infrastructure.



**Liberty for Java™**  
Develop, deploy, and scale Java web apps with ease. IBM WebSphere Liberty Profile is a highly configurable, open, and standards-based Java EE runtime.  




**Runtime for Swift**  
A Kitura-based server application that you can use as a starting point to get your own Kitura application.  




**PHP**  
Develop, deploy, and scale PHP web apps with ease.  




**Tomcat**  
Develop, deploy, and scale Tomcat web apps with ease.  




**SDK for Node.js™**  
Develop, deploy, and scale server-side JavaScript® apps with ease. The IBM SDK for Node.js™ provides a fully managed, open, and standards-based Node.js runtime.  


**XPages**  
Develop, deploy and scale IBM XPages applications with ease. The IBM XPages runtime provides you with a fully managed, open, and standards-based XPages runtime.  


**Python**  
Develop, deploy, and scale Python web apps with ease.  



**ASP.NET Core**  
Develop, deploy, and scale ASP.NET Core web apps with ease.  



**Go**  
Develop, deploy, and scale Go web apps with ease.  


**Ruby**  
Develop, deploy, and scale Ruby web apps with ease.  






 Containers


 Infrastructure

 VMware

 Dashboard


 APIs

 Application Services


 Apple Development New


 Blockchain


 Cloud Foundry Apps

 Data & Analytics

 DevOps

 Finance

 Functions

 Integrate

# Run your app in seconds








## No VM or middleware setup

- Provision runtimes in seconds
- Auto and manual scaling options

## Multiple language support

- Java Liberty, JavaScript, Ruby, Go, PHP, python provided
- Bring any language from the community thru **Buildpacks**
- List of Buildpack examples :

 <b>Liberty for Java™</b> Develop, deploy, and scale Java web apps with ease. IBM WebSphere Liberty Profile. 	 <b>SDK for Node.js™</b> Develop, deploy, and scale server-side JavaScript® apps with ease. The IBM SDK for Node.js. 	 <b>ASP.NET Core</b> Develop, deploy, and scale ASP.NET Core web apps with ease. 
 <b>Runtime for Swift</b> A Kitura based server application that you can use as a starting point to get your own. 	 <b>XPages</b> Develop, deploy and scale IBM XPages applications with ease. The IBM XPages. 	 <b>Go</b> Develop, deploy, and scale Go web apps with ease. 
 <b>PHP</b> Develop, deploy, and scale PHP web apps with ease. 	 <b>Python</b> Develop, deploy, and scale Python web apps with ease. 	 <b>Ruby</b> Develop, deploy, and scale Ruby web apps with ease. 
 <b>Tomcat</b> Develop, deploy, and scale Tomcat web apps with ease. 		

[github.com/cloudfoundry-community/cf-docs-contrib/wiki/Buildpacks](https://github.com/cloudfoundry-community/cf-docs-contrib/wiki/Buildpacks)

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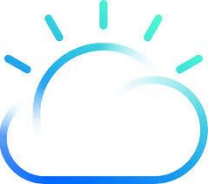
Infrastructure

Platform

PERFORMANCE &  
CONTROL

PORTABILITY

DEVELOPMENT SPEED



A Serverless Platform for Event-Driven Compute

Runs code **only** on-demand  
on a per-request basis

**No** management and  
operation of **infrastructures**

**Focus** on developing **value-adding code** and on driving  
**innovations**



No servers



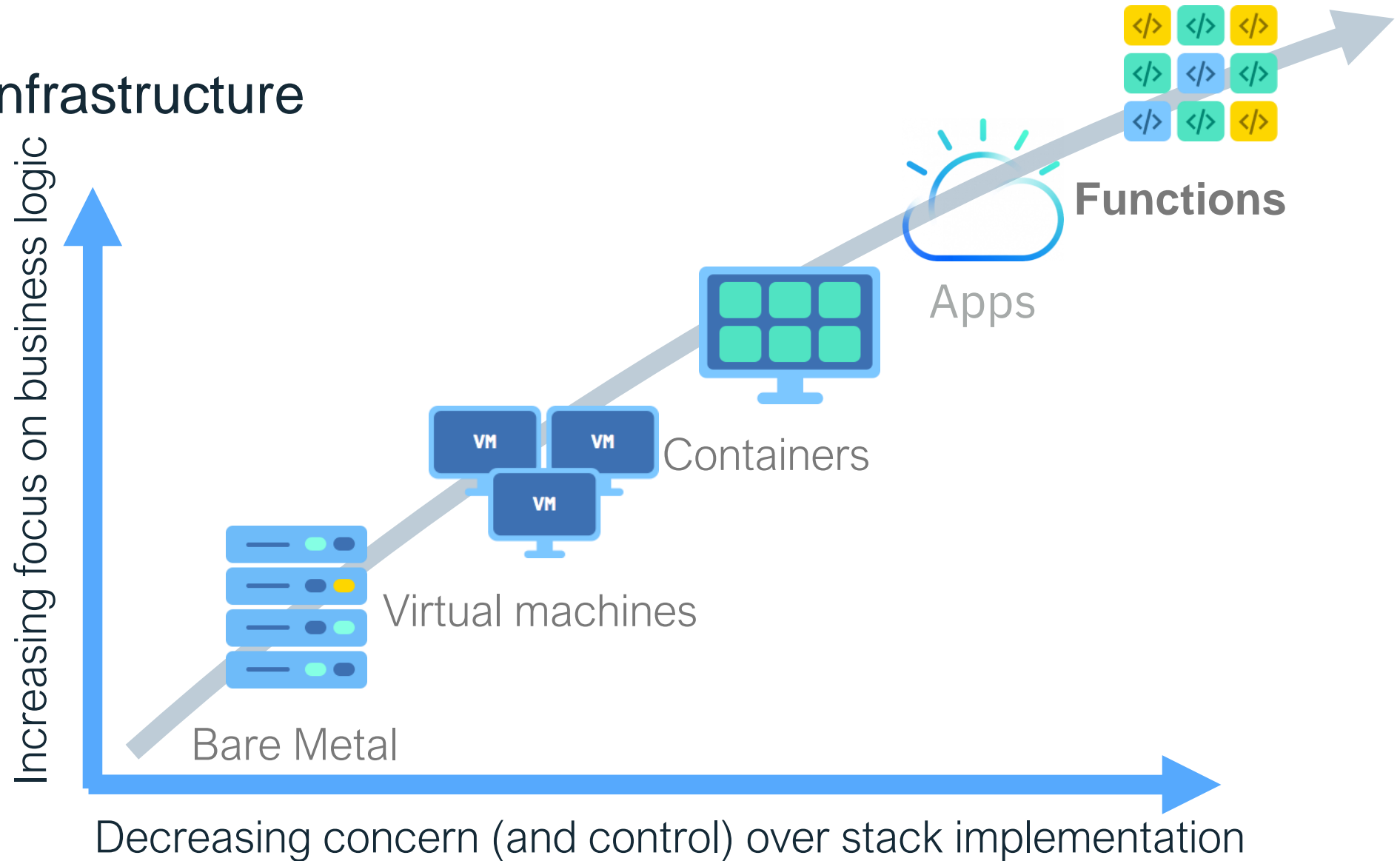
Just code



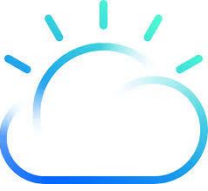
# Focus more on code...



... less on infrastructure



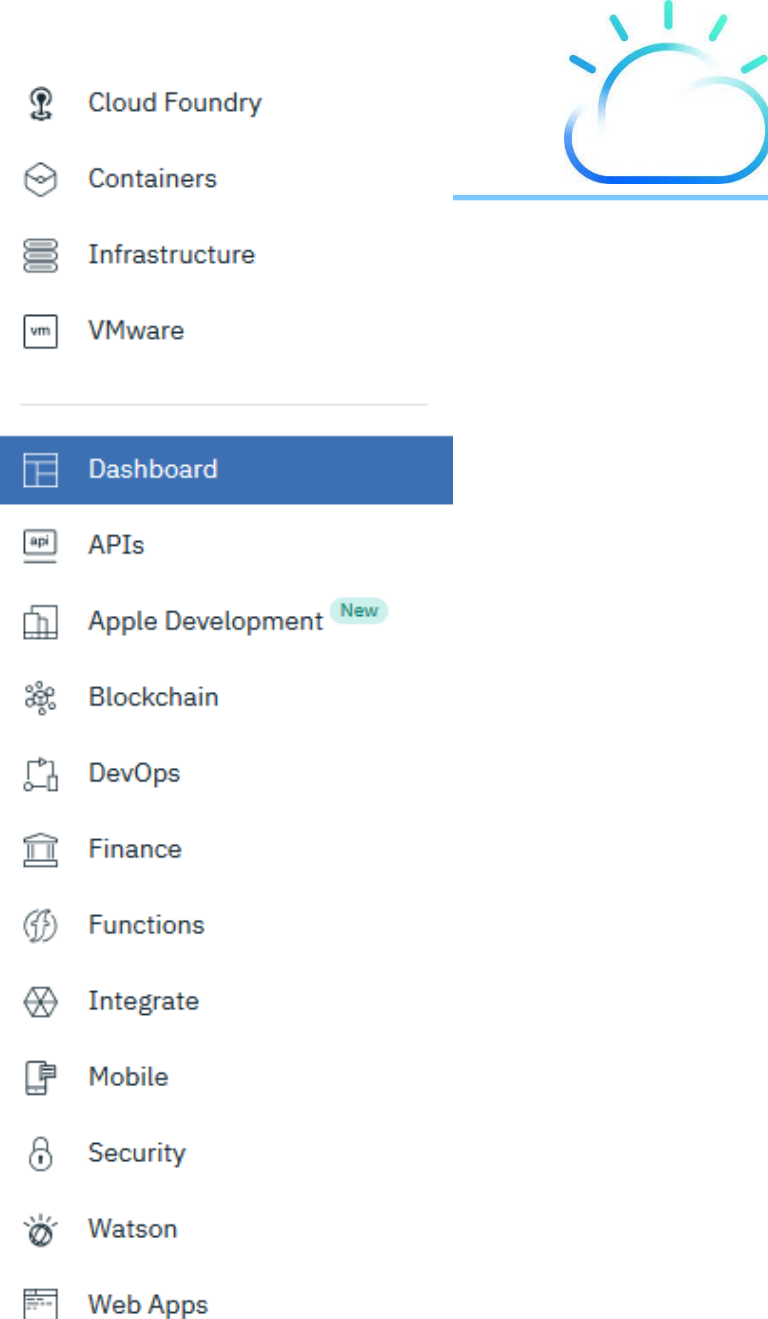
# Agenda



- Compute options
  - Infrastructure
  - Cloud Foundry
  - IBM Cloud Function
- IBM Cloud Services
  - Watson Services
  - Watson Studio
- IBM Cloud Account
  - Promo Code
  - Prepare environment

# IBM Cloud managed services

- Building blocks of applications running in IBM Cloud runtimes available as infrastructure or platform.
- Add ready to use features and functionality to application code
- Covers AI, Internet of Things, Analytics, DevOps, Blockchain, Storage and many more...
- Are provided by IBM, Open-source communities and third-party partners



# AI : Watson Services



IBM Cloud

Catalog

Docs

Cookie Preferences

Log in

Sign up

## Catalog

Search

Filter

### All Categories

Compute

Containers

Networking

Storage

AI

Analytics

Databases

Developer Tools

Integration

Internet of Things

Security and Identity

Starter Kits

Web and Mobile

Web and Application

### AI



#### Watson Assistant (formerly Conversation)

Lite • IBM

Add a natural language interface to your application to automate interactions with your end users. Common applications include...



#### Discovery

Lite • IBM

Add a cognitive search and content analytics engine to applications.



#### Knowledge Catalog

Lite • IBM

Discover, catalog, and securely share enterprise data.



#### Knowledge Studio

Lite • IBM

Teach Watson the language of your domain.



#### Language Translator

Lite • IBM

Translate text, documents, and websites from one language to another. Create industry or region-specific translations via the service's...



#### Machine Learning

Lite • IBM

IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.



#### Natural Language Classifier

IBM

Natural Language Classifier performs natural language classification on question texts. A user would be able to train their data and th...



#### Natural Language Understanding

Lite • IBM

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and more.



#### Personality Insights

Lite • IBM

The Watson Personality Insights derives insights from transactional and social media data to identify psychological traits



#### Speech to Text

Lite • IBM

Low-latency, streaming transcription



#### Text to Speech

Lite • IBM

Synthesizes natural-sounding speech from text.



#### Tone Analyzer

Lite • IBM

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, social, and...



#### Visual Recognition

Lite • IBM

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a default model off the shel...



#### Watson Studio

Lite • IBM

Embed AI and machine learning into your business. Create custom models using your own data.

FEEDBACK

# Watson Studio

## Supporting the end-to-end AI workflow

Connect &  
Access Data

**Connect** and discover content from multiple data sources in the cloud or on premises. Bring **structured** and **unstructured** data to one toolkit.

Search and Find  
Relevant Data

**Find** data (structured, unstructured) and AI assets (e.g., ML/DL models, notebooks, Watson Data Kits) in the **Knowledge Catalog** with intelligent search and giving the right access to the right users.

Prepare Data  
for Analysis

Clean and prepare your data with **Data Refinery**, a tool to create data preparation pipelines visually. Use popular open source libraries to prepare unstructured data.

Build and Train  
ML/DL Models

**Democratize** the creation of ML and DL models. Design your AI models **programmatically** or **visually** with the most popular **open source** and IBM ML/DL frameworks or leverage transfer learning on **pre-trained** models using **Watson tools** to adapt to your business domain. Train at scale on **GPUs** and **distributed** compute

Deploy Models

Deploy your models easily and have them **scale automatically** for online, batch or streaming use cases

Monitor, Analyze  
and Manage

Monitor the performance of the models in production and trigger automatic retraining and redeployment of models. Build **Enterprise Trust** with Bias Detection, Mitigation Model **Robustness** and Testing Service Model **Security**.

# Watson Studio



IBM Watson Studio interface showing a Jupyter notebook environment. The notebook displays a bar chart titled "Tweets Country Distribution based on the User Profile" with categories like GERMANY, MEXICO, CANADA, INDIA, JAPAN, and SPAIN. The interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Help) and a code editor with Python code.

Open Source tools – Jupyter and RStudio

IBM Watson Studio interface showing the "Environments" section. It displays a table of active environment runtimes and environment definitions. The "Active environment runtimes" table is currently empty, indicating no active runtimes. The "Environment definitions" table lists configurations like "Default SPSS Modeler XS" with details on tool, hardware configuration, and last modified date.

Elastic and customizable compute environments

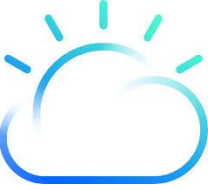
IBM Watson Studio interface showing the "Car recognition" project. It displays a list of classes (e.g., AcuraTL, AcuraIntegra) and a "Train Model" button. The interface includes a search bar for classes and a "Drop a .zip file of images here" section for uploading training data.

Watson APIs – train and test Watson

IBM Watson Studio interface showing a visual ML flow diagram. The flow starts with "Image Data" and proceeds through "Conv 2d", "ReLU", "Pooling 2d", "Flatten", "Dense", "Softmax", "Accuracy", "Sigmoid Cross-Entropy", and "SGD". The diagram illustrates the architecture of a neural network for image classification.

Create ML flows and design Neural Networks visually

# DevOps Toolchain: Add tools to your toolchain



IBM Cloud

Catalog Docs Support Manage

Overview  
Connections  
Manage

Toolchains / testtrial

View app

Add a Tool

THINK

Issues  
testtrial  
✓ Configured

CODE

Git  
testtrial  
✓ Configured

DELIVER

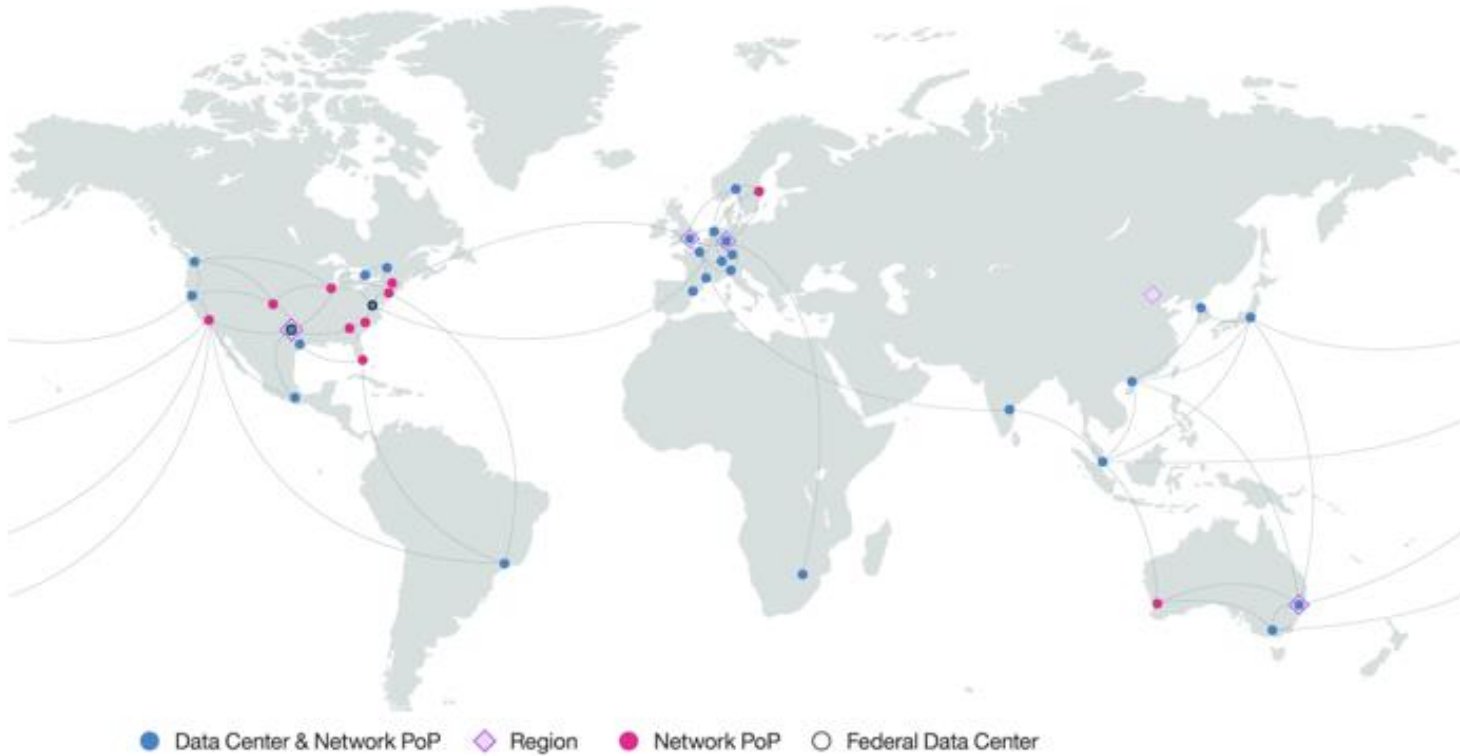
Delivery Pipeline  
testtrial  
✓ Configured

Eclipse Orion Web IDE  
✓ Configured

# IBM Cloud Regions



Nearly 60 IBM Cloud data centers around the world:

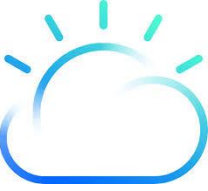


## IBM Cloud Public Regions:

- US South  
**API endpoint:** `api.ng.bluemix.net`
- US East  
**API endpoint:** `api.us-east.bluemix.net`
- United Kingdom  
**API endpoint:** `api.eu-gb.bluemix.net`
- Frankfurt  
**API endpoint:** `api.eu-de.bluemix.net`
- Sydney  
**API endpoint:** `api.au-syd.bluemix.net`



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# IBM Cloud lite account



- **Free** account
- **No time limit**
- Learn, explore and build POCs
- **One** Cloud Foundry **Organization** in one Region; **one**
- **Resource Group**
- Auto sleep, garbage collection, alerts before approaching data thresholds
- 256 MB of Cloud Foundry runtime memory;
- Kubernetes Cluster Lite Plan: 2 CPUs, 4 GB RAM
- Access to usage capped plans for **services with *Lite* label**

# Pay-As-You-Go and Subscription Accounts

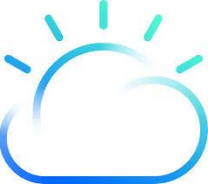


- Access to the **full catalog**, including the **free plans**
- **Production use cases**
- **Multiple resource groups**
- **Pay-as-you-go:**
  - Monthly IBM Cloud invoice
  - charges are based on your use of IBM Cloud compute and services
- **Subscription:**
  - get a monthly discount based on a minimum monthly spending
  - commitment, negotiated pricing

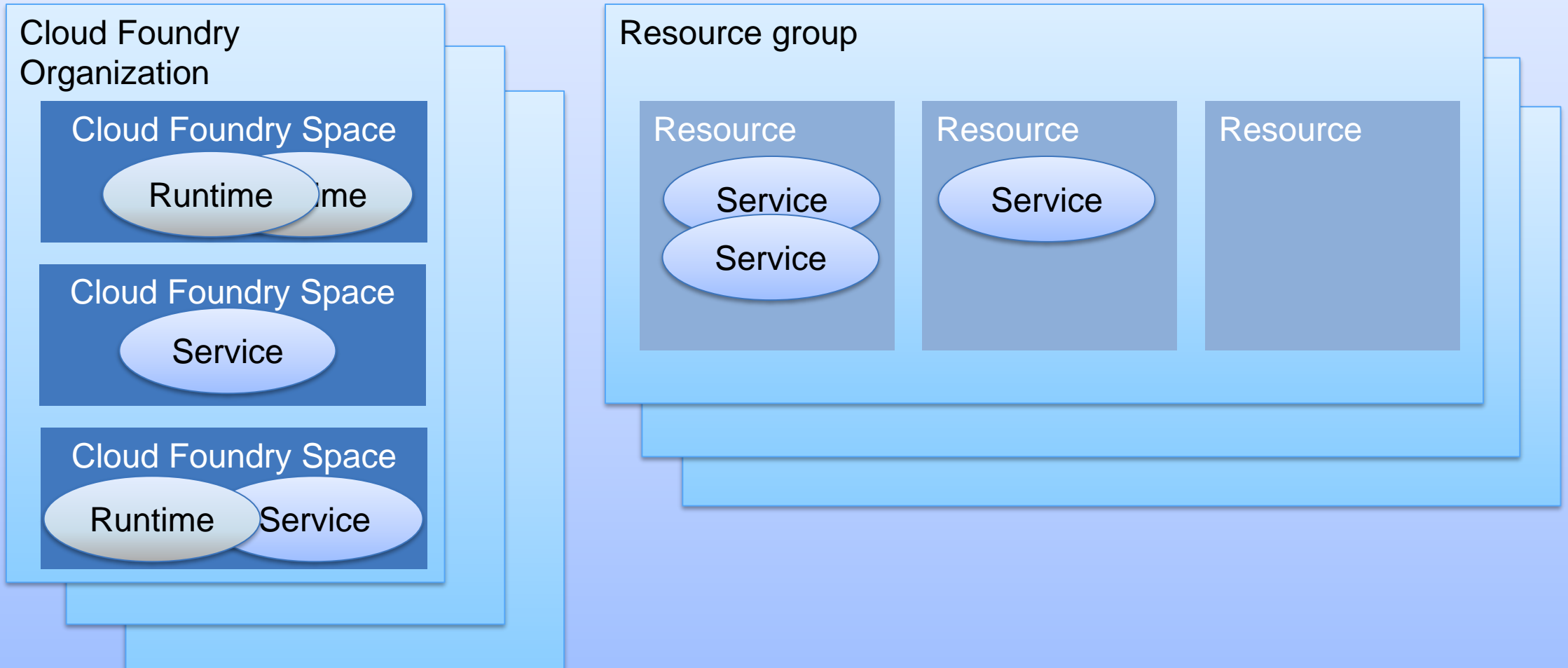


- An IBM Cloud account is organized into
  - Resource groups
  - Cloud Foundry organizations and spaces
  - Regions
- cloud foundry
  - services and applications are assigned to a space
  - a cloud foundry space is assigned to one organization and one region
  - a cloud foundry organization can have multiple spaces in multiple regions
- Resource groups
  - Independent of cloud foundry spaces
  - Organize your account resources in customizable groups

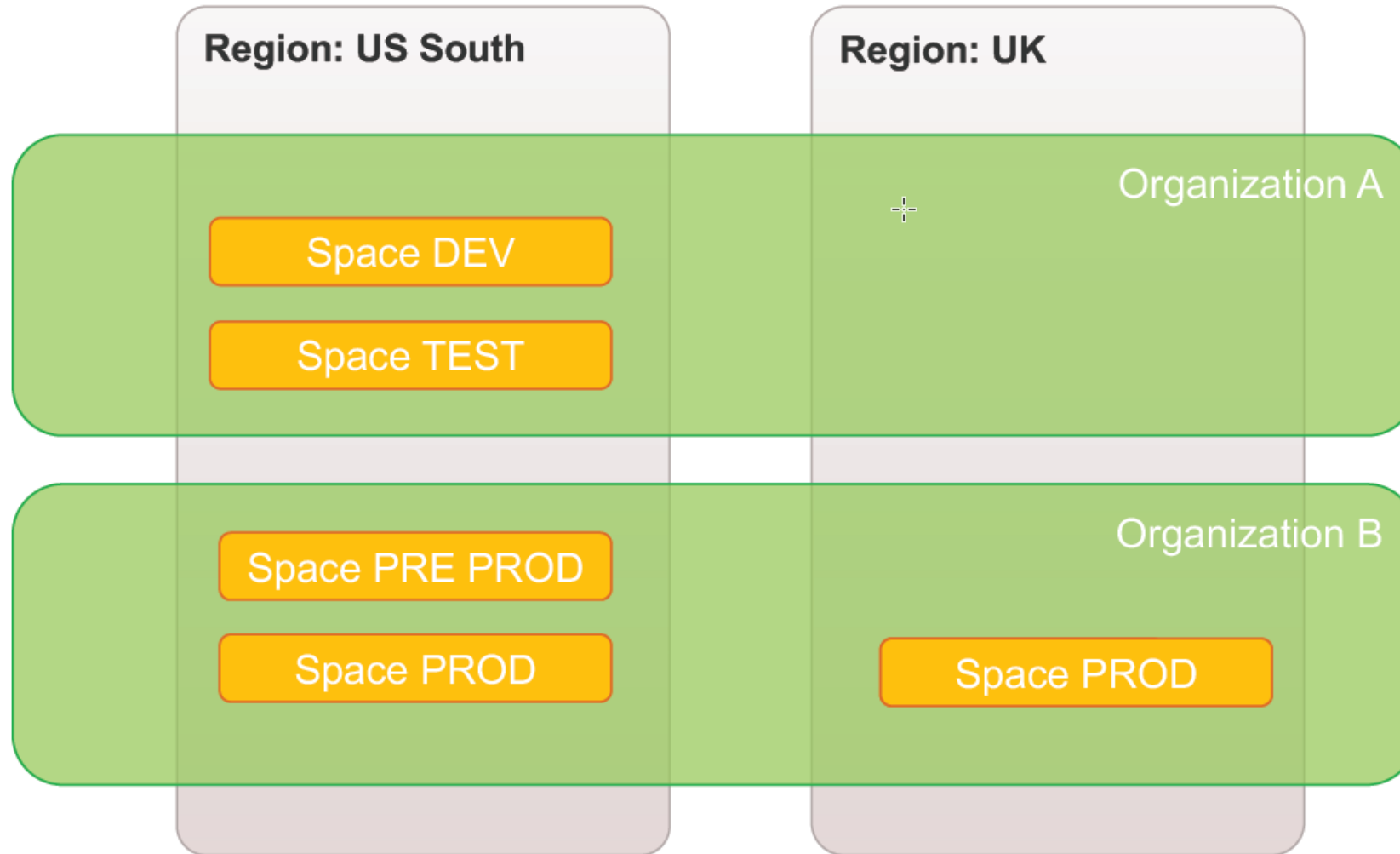
# Account Structure



## Account



# Account Multi Organizations / Multi regions



# Add promo code



Screenshot of the IBM Cloud console dashboard showing the 'Manage' menu open, highlighting the 'Billing and usage' section. The dashboard includes a search bar, account information, and a 'Create resource' button. The main content area features three cards: 'Build with Watson', 'Create enterprise-level web apps', and 'Learn to build, deploy, and scale'.

Dashboard

RESOURCE GROUP All Resources ▾ CLOUD FOUNDRY ORG All Organizations ▾ CLOUD FOUNDRY SPACE All Spaces ▾

Manage

- Account >
- Billing and usage > Billing
- Security > Usage
- Privacy

Search for resource...

Team5 IBM's Account

Create resource

Fast-track your app development

Want to go from prototype to production with the click of a button? Hit the ground running with one of our IBM Cloud starter kits. You can also check out our solution tutorials that provide real-world cloud solution examples.

Build with Watson

Starter Kit · Lite Services · IBM

Accelerate your AI development to build smarter solutions.

View Watson starter kits

Create enterprise-level web apps

Starter Kit · Lite Services · IBM

Develop and deploy cloud-native apps within minutes.

View App Service starter kits

Learn to build, deploy, and scale

Tutorials · Lite Services · IBM

Use IBM Cloud to implement common patterns based on best practices and proven technologies.

View Solution tutorials

FEEDBACK

# Add promo code



IBM Cloud

Catalog

Docs

Support

Manage

Search for resource...

Team5 IBM's Account

Profile

Platform Notifications

Usage Dashboard

Billing

Cloud Foundry Orgs

Resource Groups

Billing

Account

Team5 IBM's Account

ID: 7bdba05aff8d427fad0220f639682b24

Account Type

Lite (Free)

256 MB of free memory each month, free Lite plan services to choose from, and easy to upgrade when you're ready for more.

Account upgrade

Pay-As-You-Go

Access the full capabilities of IBM Cloud only for what you use, and only when you upgrade!

Add Credit Card

Feature (Previously known as)

Formerly known as

only per each feature

Apply code

Subscription

Feature Code

Enter a feature code to apply an IBM Cloud capability to this account including subscriptions, credit, and account extensions.

You can apply a feature code to only one IBM Cloud account, and the code cannot be removed after it's applied.

Feature Code

676B82-A1DC-2444-944C-4FFDF154801E

The feature code will be applied to the account:

Team5 IBM's Account

Cancel

Apply

Need help?

ng calculator

act sales

FEEDBACK



# Add promo code



## Feature Code

Applied: 35676B82-  
A1DC-2444-944C-  
4FFDF154801E

The following changes have been  
applied to the account, Team5 IBM's  
Account.

- Converted Lite account to trial account.
- This trial account is valid for 185 days.
- Updated Cloud Foundry org quota to 16GB.

Enter another code

Close

# Create a Cloud Foundry space in US South Region



A screenshot of the IBM Cloud console interface. The top navigation bar is dark blue with the IBM Cloud logo on the left and a search bar on the right. Below the navigation bar, the 'Manage' menu is open, showing options like 'Account', 'Billing and usage', 'Security', 'Privacy', 'Users', 'Cloud Foundry orgs', 'Resource groups', and 'Platform notifications'. The 'Cloud Foundry orgs' option is highlighted with a mouse cursor. The main content area shows a 'Dashboard' with filters for 'RESOURCE GROUP', 'CLOUD FOUNDRY ORG', and 'CLOUD FOUNDRY SPACE'. Below the filters, there's a section titled 'Fast-track your app development' with a paragraph about starter kits. To the right of this section is a diagram showing a workflow with various icons. At the bottom, there are three cards: 'Build with Watson', 'Create enterprise-level web apps', and 'Learn to build, deploy, and scale', each with a 'View' button.

# Create a Cloud Foundry space in US South Region



IBM Cloud

Catalog Docs Support Manage

Search for resource...

Team5 IBM's Account

Profile

Platform Notifications

Usage Dashboard

Billing

Cloud Foundry Orgs

Resource Groups

Cloud Foundry Organizations

Search

Name

team5.ibm@mail.com

Account:

Team5 IBM's Account

Add an organization +

Roles	Actions
Manager	...

IBM Cloud

Catalog

Cloud Foundry Orgs

Spaces

Search

Name

dev

Create a new space

Region

US South

Name

VRWorkshop

Cancel Save

Account:

Team5 IBM's Account

Add a space +

Actions
...