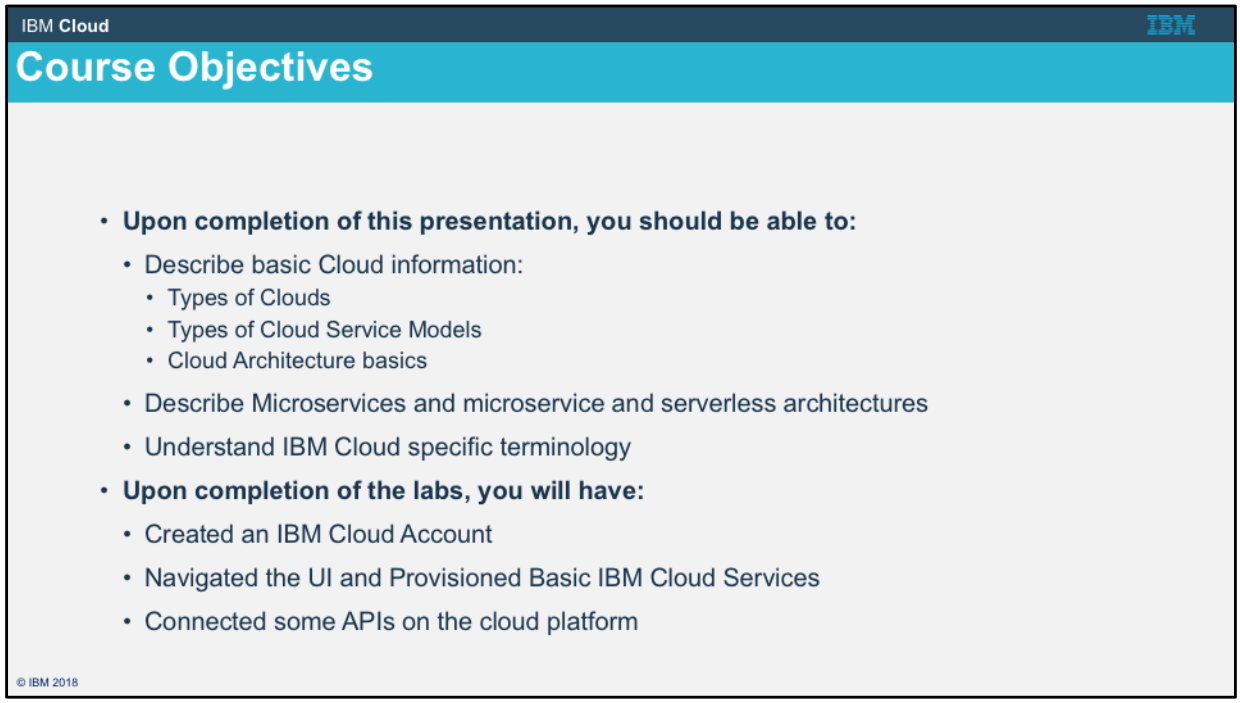
Welcome everyone to the Cloud Essentials overview session!

Today's agenda:

We will review the objectives for the session, then we will take a really brief look at what is cloud, and the basics of cloud architecture. From there we will make a dive into Microservices and serverless architectures, before concluding with a look at the IBM Cloud specifically and then we will go through our lab.

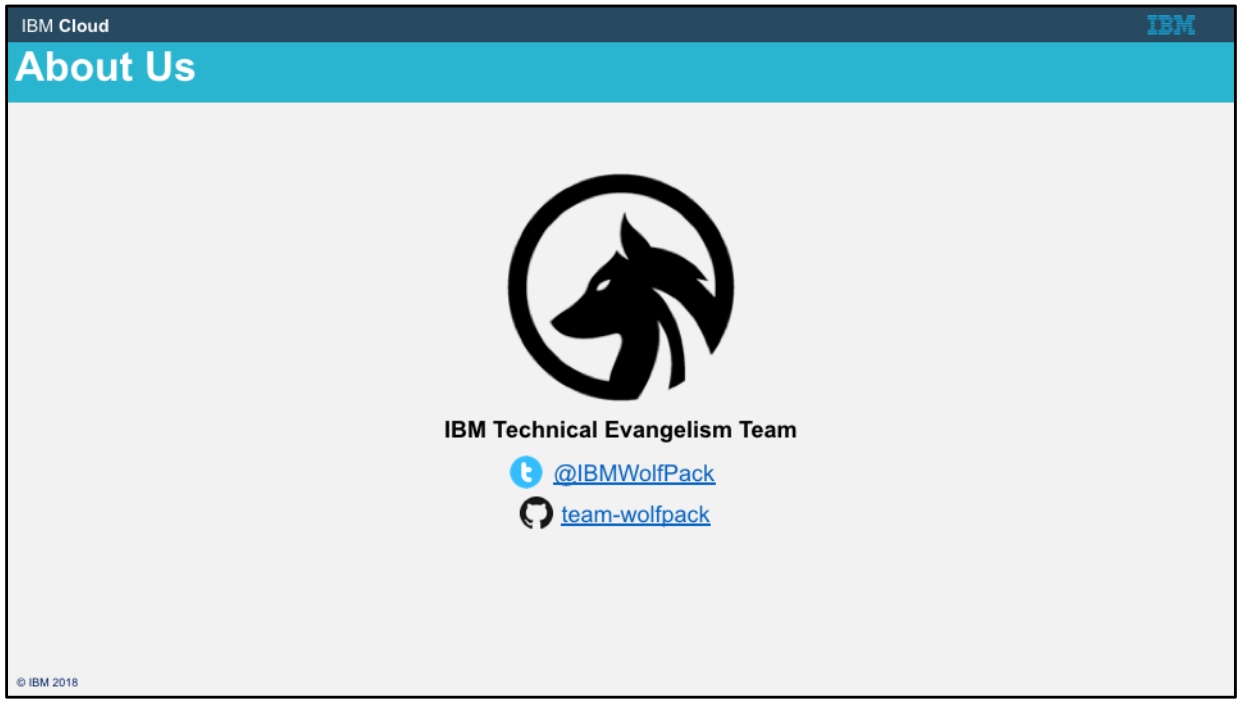


Just a quick review of our objectives for the day:

When we finish, you should be able to describe the basics of cloud architectures and types of cloud platforms

You'll be able to describe and understand the uses of and functions of a microservice, and serverless architectures

When we get through with the lab we will have Created a free IBM Cloud account, navigated and used the UI to deploy services, and built some basic API connections using the cloud platform



The IBM WolfPack is the technical innovation team dedicated to making it easy for you to find the right platform, tools, and education so you can change the world.

The structure of cloud itself isn't earth shattering. It is computers running in someone else's data center so that you do not have to manage them. In addition there has been a major growth in services that cloud platforms provide that address specific needs that are complex or cumbersome to "hand-code" from scratch.

Cloud Models

PUBLIC

Public and open-by-design

Fast and on Demand

Easily configure, deploy and scale applications, services, and infrastructure

Shared environments with community-driven features, and shared platforms and infrastructure

HYBRID

Multi-cloud model options

A Mix of Many Options

Instant scalability of public cloud with support for critical enterprise integration

Features and flexibility of the public cloud with local control and management

Cloud to cloud and multi-cloud platform for resiliency and access to unique services

PRIVATE

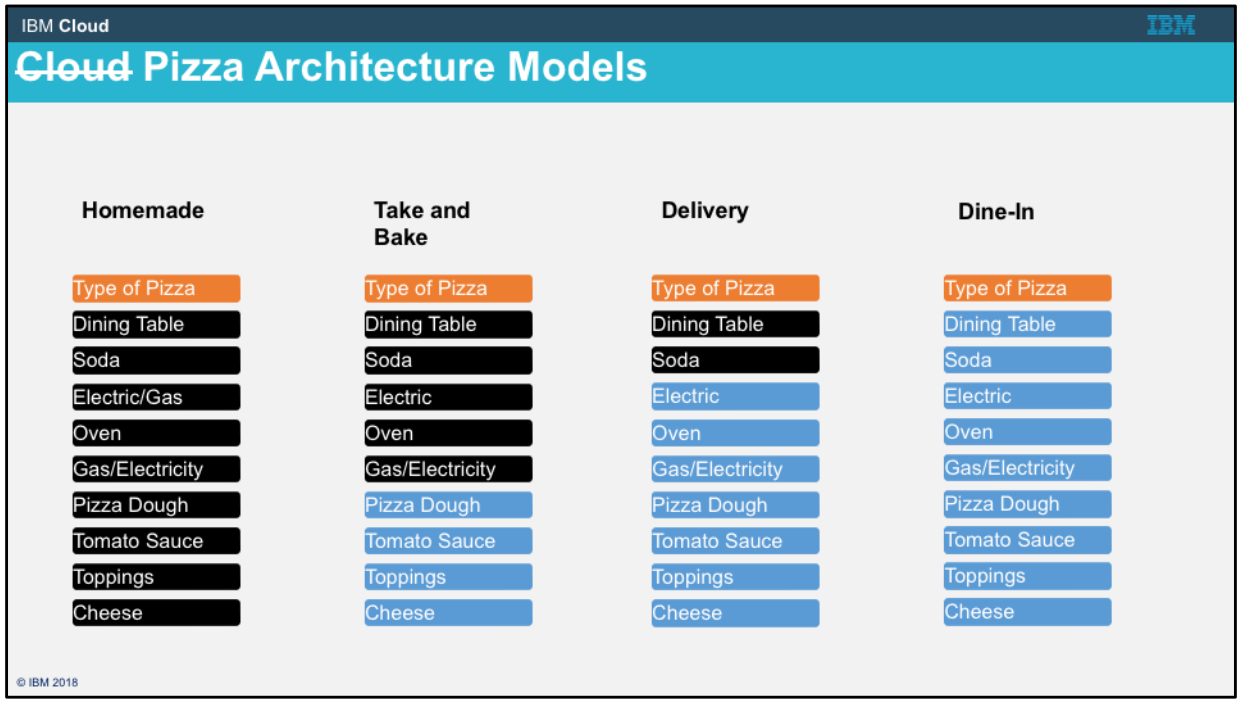
Management and deployment options

Dedicated Flexibility

On Prem: Some features of public cloud, running on prem

Hosted: Dedicated "slices" of a public cloud running in a provider's environment

SOURCES: Forbes and Gartner



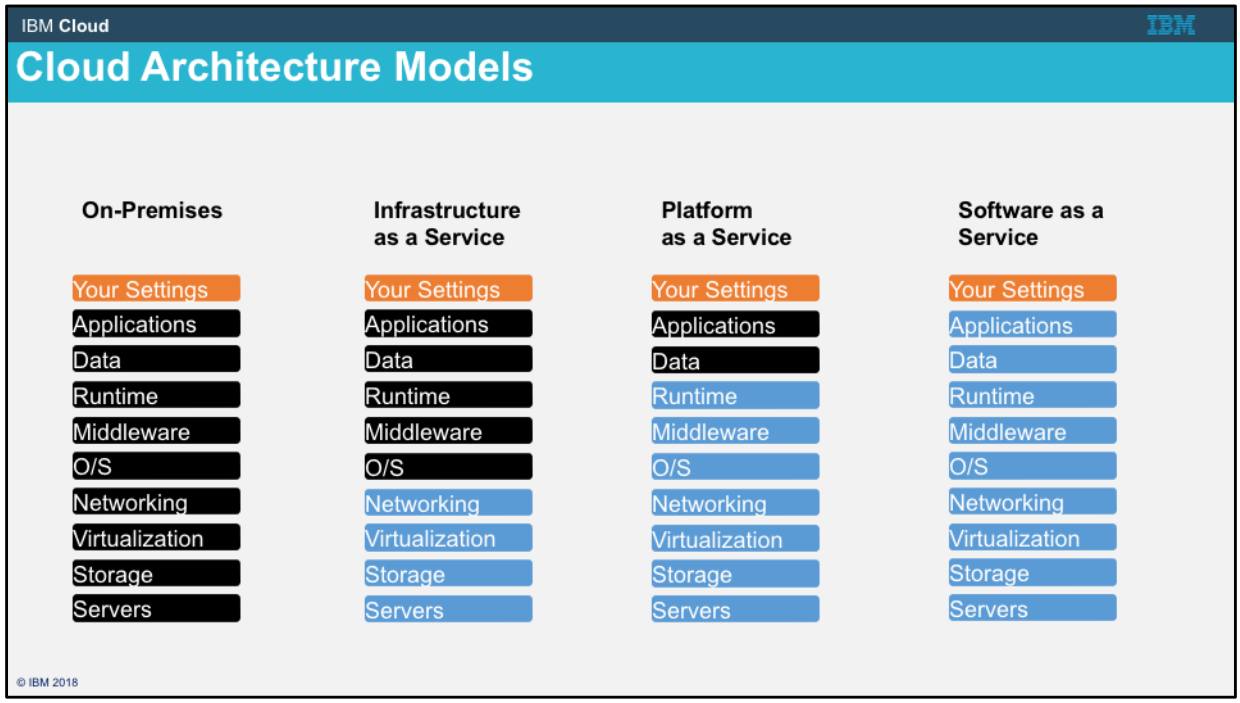
So what does this look like in practice?

<click> let's take an example of Pizza – when you want pizza and you are making it at home, you decide on the type of pizza, and then you need to provide all the things to make it and serve it. Home Made pizza is good, and it is exactly what you want, but it takes a long time to make.

<click> so let's get take and bake! I need to know my pizza type still, and I need to serve and cook it, but someone else makes it. That's easier, but I still have to wait for it to come out of the oven and if my oven is broken… no pizza.

<click> so let's do delivery! I pick the type of pizza, and it shows up ready to eat. I just need to set the table and maybe have some drinks. Faster still, but man I want it RIGHT NOW.

<click> dine in it is! Everything given to me, I just choose the type of pizza and eat. Fast, simple, and exactly what I need! <click to switch slide>



That Pizza Model is exactly what the evolution of cloud platforms has been like:

On prem = bake at home

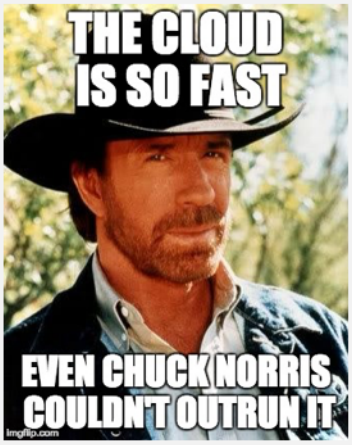
IaaS is Take and Bake

PaaS is the delivery model, and lastly Software as a Service is full dine in. I always have to take care of what I want on my pizza (configurations), but someone else does the rest.

IBM Cloud

Top 10 Reasons to move to Cloud

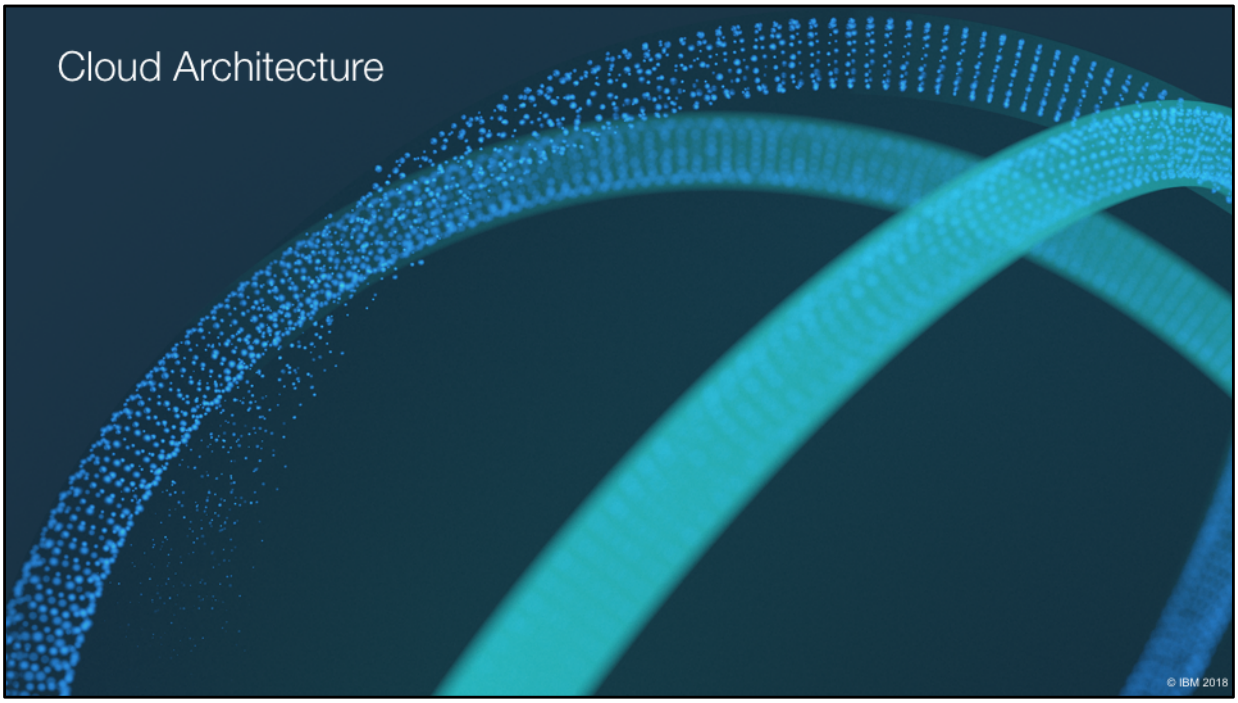
- 1. Flexibility
- 2. Disaster Recovery
- 3. Automatic Software and Security updates
- 4. Capital Expenditure Free
- 5. Increased collaboration
- 6. Work from anywhere
- 7. Document Control
- 8. Security
- 9. Competitiveness
- 10. Environmentally friendly



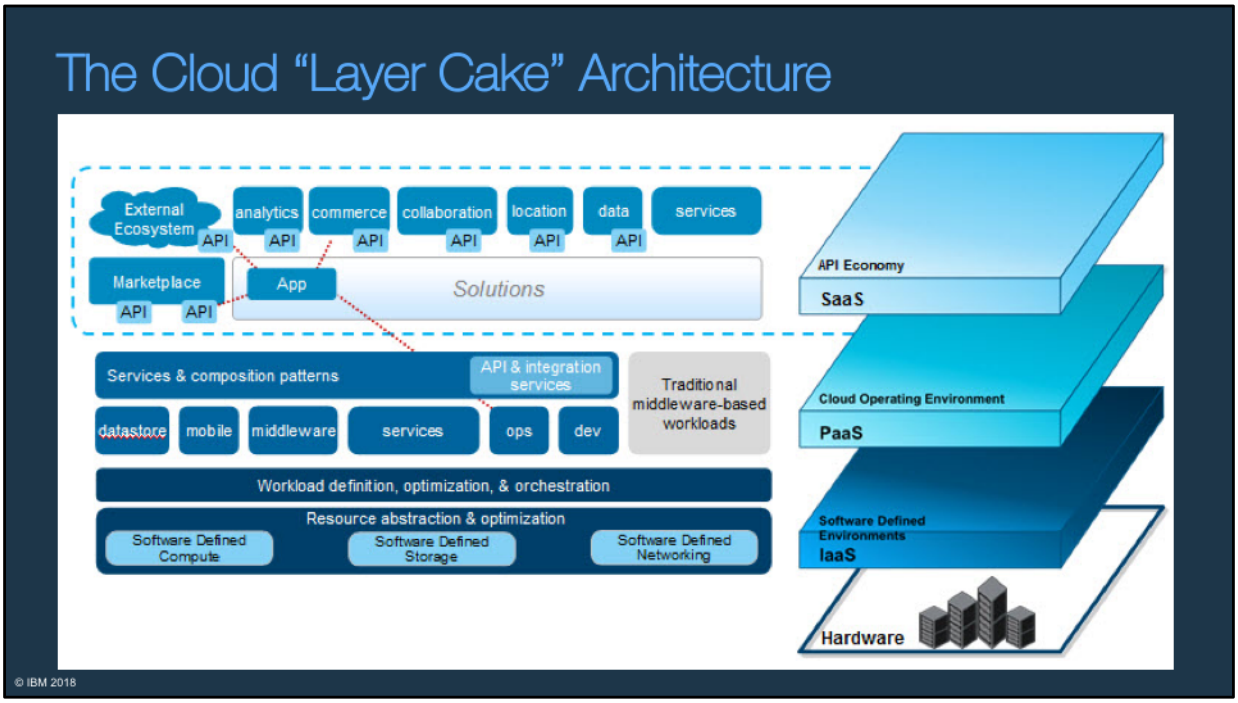
<Click for list to appear>

Key points – flexible, faster, Reduced capex

<click> for memes to reinforce those 3 key points



So let’s look at the cloud architecture and see what makes up a cloud



This is a cloud. Any cloud. IBM, MS, AWS, they all look like this under the hood in some form.

Hardware at the bottom, IaaS, PaaS, and SaaS on top in order to make up the various service layers.

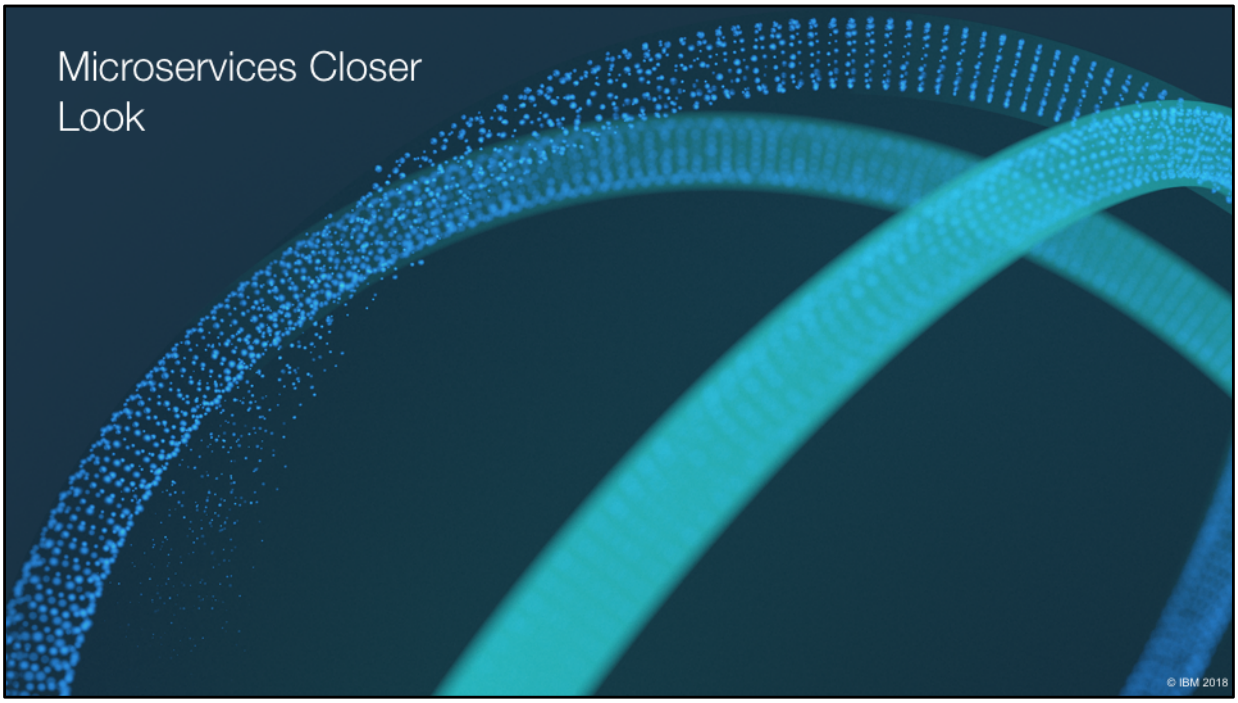
Increasingly people are moving to the top level and leaving the rest to the provider. That is the rise of the API economy and microservice architecture we have heard about. There are lots of huge advantages to moving to cloud, but in order to take advantage of them you need to have this architecture in mind.

<click to change slide>

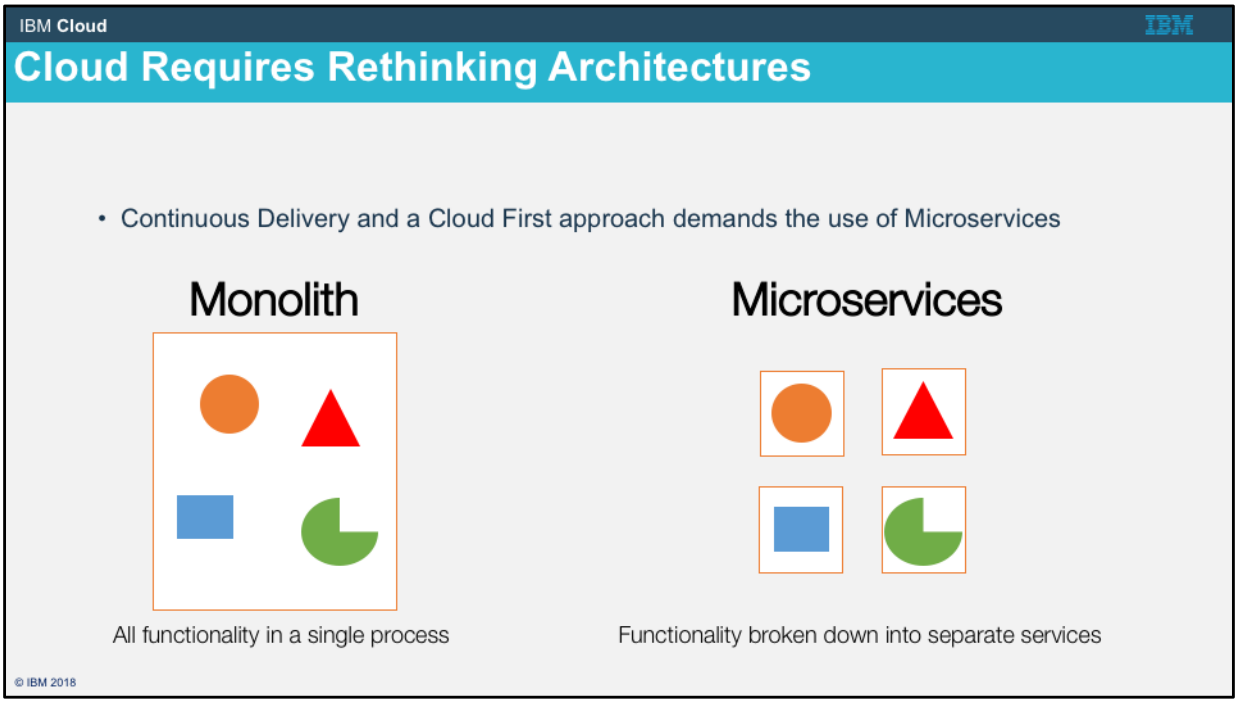
Cloud offers a lot of benefit, but only when you really embrace the full “move to cloud”

This takes a lot of time and unfortunately a lot of organizations just get here (POINT to ”Lift and Shift”). There is good opportunity to move higher up the chain, but that’s not always easy and a lot of people bog down at just getting things replatformed and never even get to a recode.

<Click> the mistake is just dropping things in cloud “as is”. Why? Because putting lipstick on a pig? <click> yep – still a pig…



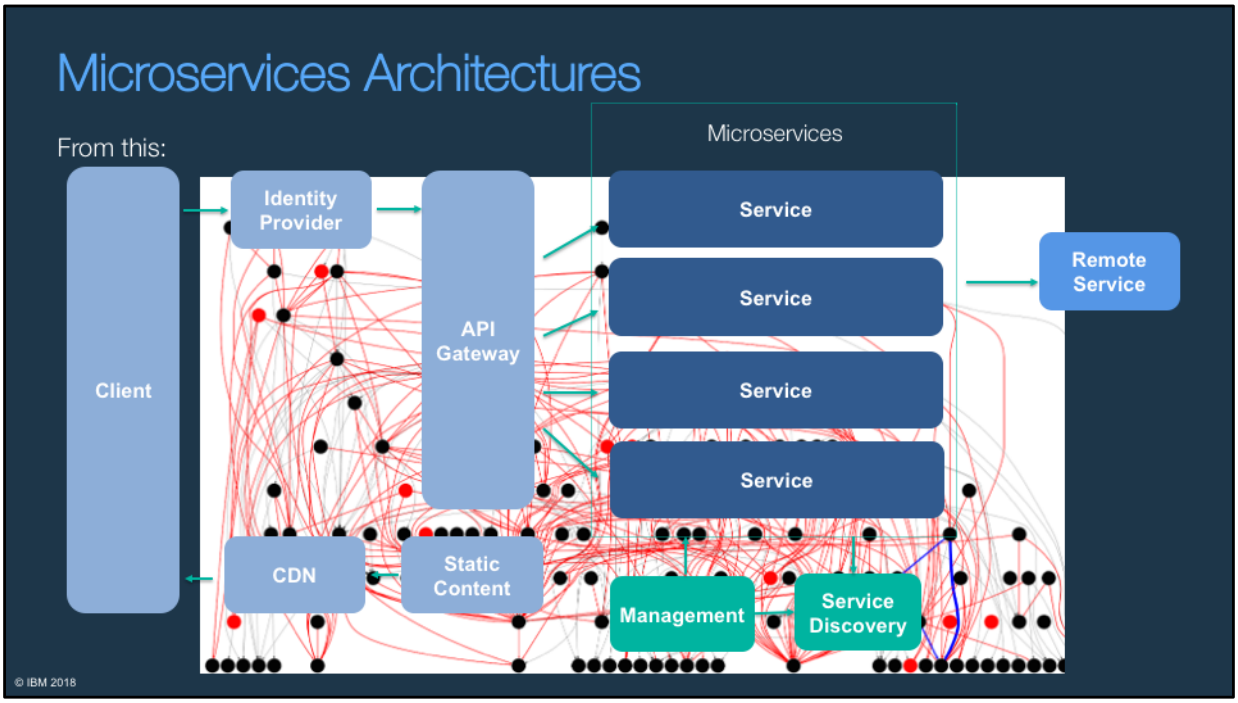
Let’s dig into the idea of replatforming with microservices



You have got to get the new way of thinking in your head

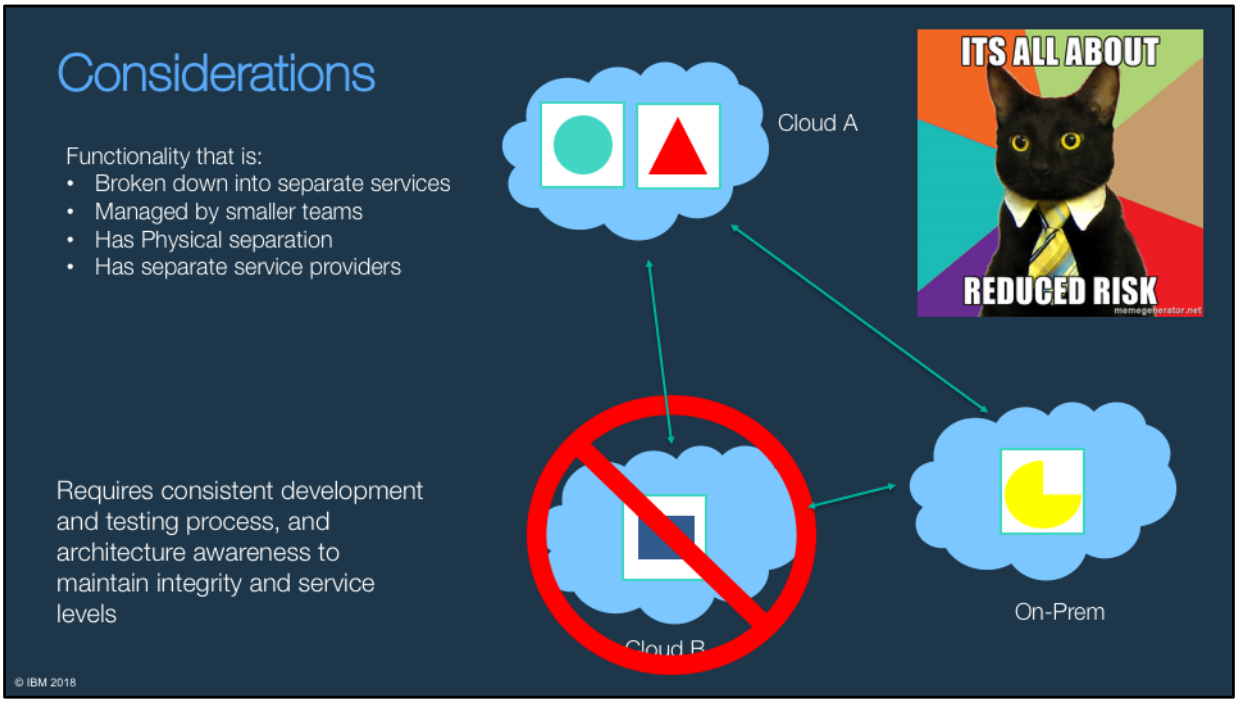
<click> Monoliths served us well for decades. They were the backbone of Web 1.0 and the genesis of everything we have today, but they were also VERY fragile and hard to manage. Everything was in one place and in a clustering of functionality in a single monolithic code base.

<click> Microservices take those functions and break them into their smallest functionality and use those as discrete services to make something operate. <Click to advance>



Microservices allow you to go from This

<click> to this. APIs working together with smaller functionality, and simpler to manage application parts, versus a giant single stack of code.



Microservices make a lot of things easier. <click>

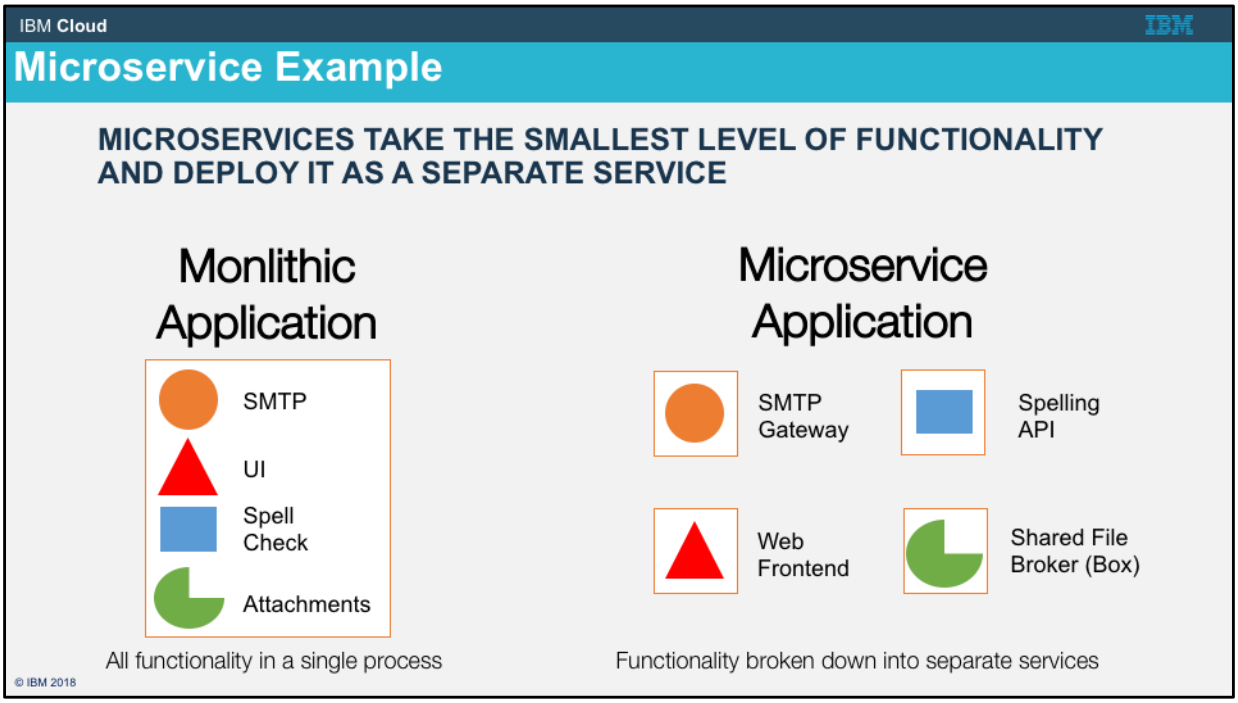
They divide things up and make them simpler and easier to manage. They provide slimmer code bases to maintain,

<click>can be distributed for load and scale,

<click>and generally make troubleshooting easier by making it easier to identify troublemakers.

<click> but they require a consistent and repeated process in order to minimize defects – thus the rise of DevOps and things like Continuous integration and code pipelining.

<click> which are all about reducing the risk of failure



Let's say I wanted to create an email application <click> here's a monolith version of it:

The basic parts I need to send and receive mail

<click> now let's build it out of microservices

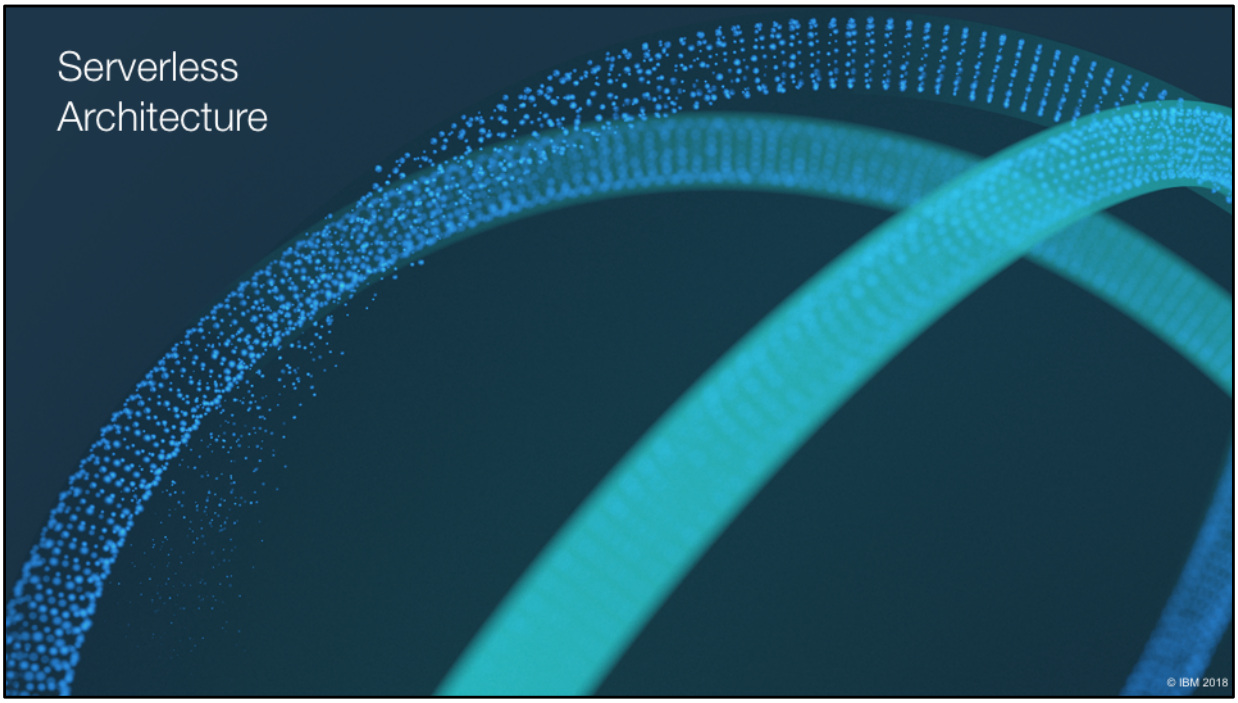
Same parts, smaller footprints, less failure/impact if a single service is broken <click to advance slide to next>

Now let's expand our minds. We are going to do a little exercise based on Netflix, one of the true pioneers of microservices.

(go to whiteboard and do the Netflix exercise - start with distro centers and physical DVDs and upgrade when done, come back and <click> to show the "death star" map of Netflix Microservices)

Sure there are a LOT of them, but each service may only be a few lines of API calls and code. Easily maintained by a single person. By spreading the load we reduce the burden on any one resource, human and code alike.

PAUSE FOR ?'s HERE



Now let’s look at Serverless!

IBM Cloud

IBM

Wait…. Serverless?

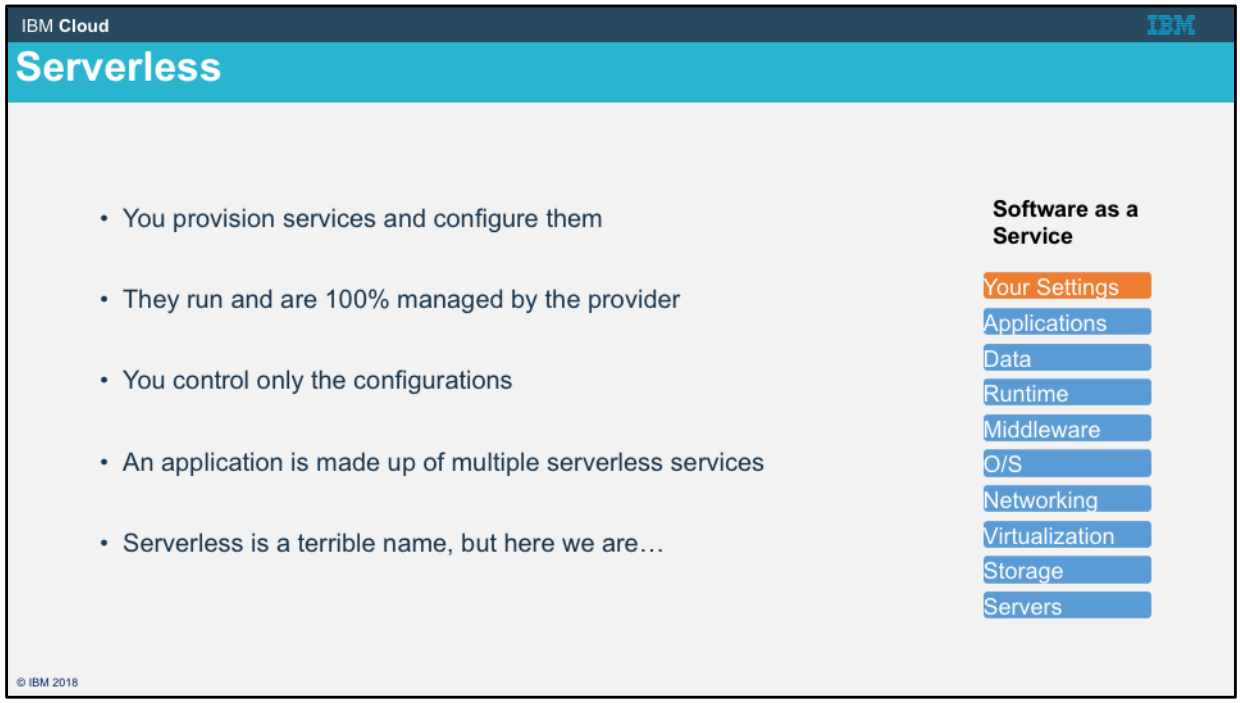
NOT REALLY

- Serverless abstracts the final layer of management into it's smallest footprint
  - There are still servers, you just don't manage them
  - You actually don't access them at all (and CAN'T)

Um…. LOL WUT?

<CLICK>Serverless is not *really* serverless.

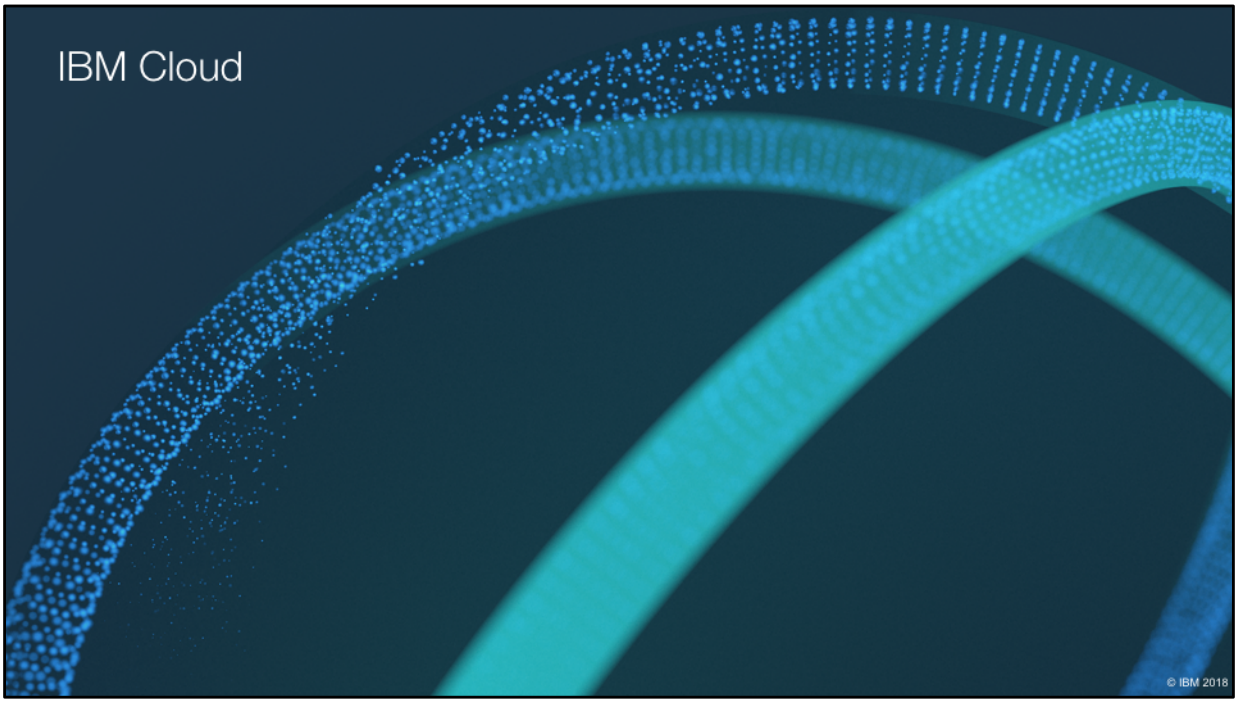
<CLICK>It is the final abstraction of services away from management and the last slimming of the footprint of management and configuration into the smallest footprint possible – the servers are there, you just don't (and in fact CAN't) see them at all.



The last note on serverless <CLICK>

You provision and configure them, they are managed 100% by the provider, there are multiple serverless services in an application, and it is a dumb name…

?'s again

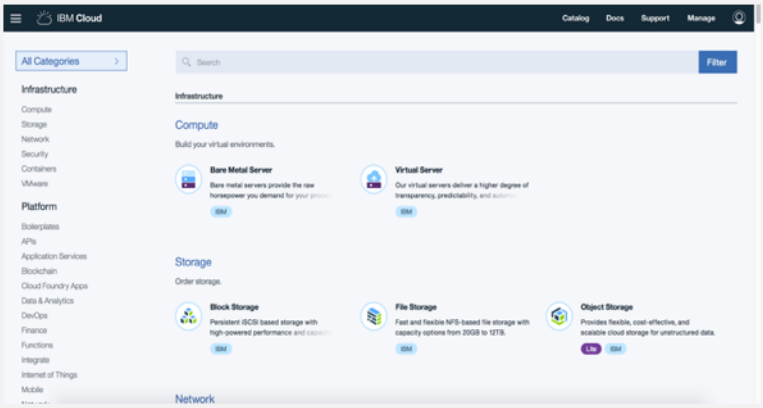


So let’s talk about IBM’s cloud in specific and get ready for the lab exercises!

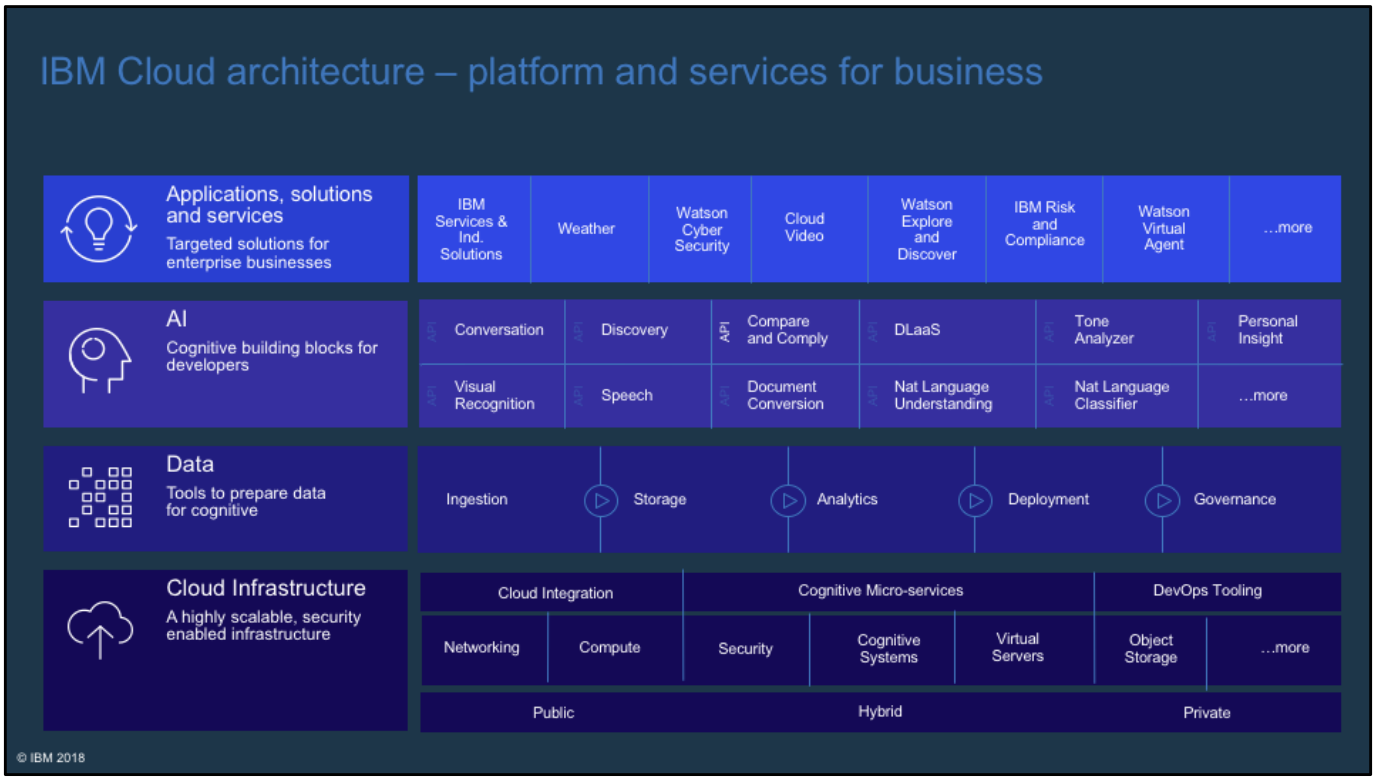
IBM Cloud

IBM Cloud Orientation

- Formerly Known as Bluemix
- Comprehensive catalog with Infrastructure and Platform Services, IBM developed, and Third Party Solutions



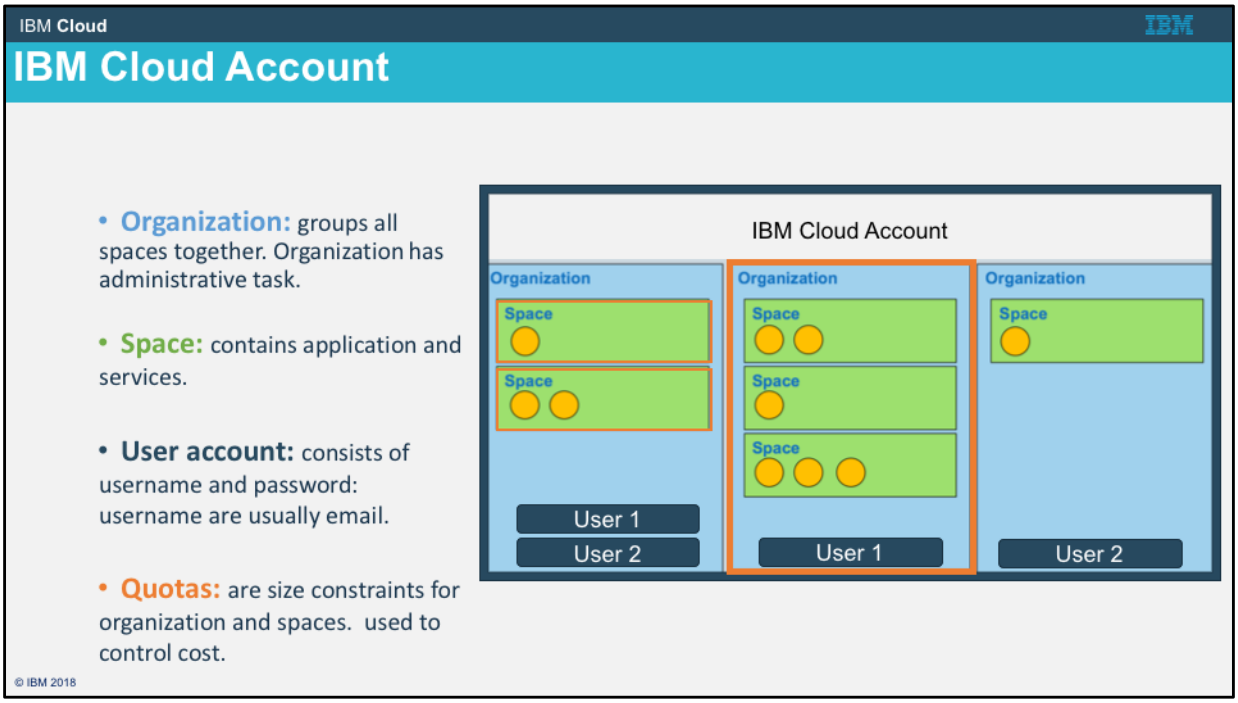
IBM's cloud is a collection of infrastructure and services – our unique offering is, of course, Watson and the related API stack, bet we also feature a number of 3rd party and IBM developed solutions, such as IoT, Blockchain, and Industry specific offerings.



Talking Points:

Our architecture is designed as an integrated whole across 4 dimensions.

- Our Cognitive **applications** are trained with more data and expertise than any competitor.
- Our sophisticated **AI** services are foundational to our architecture, and we allow for customized models. Our competitors only offer low-level AI without industry-specificity.
- Client **data** will never be used to train another client's AI. Our architecture allows for data use that is both open and with regulatory governance.
- Our **cloud** has been purpose-built to allow for accelerated AI training.



Cloud accounts are made up of multiple parts:

<CLICK> Accounts have organizations and spaces which are used to separate various functionalities and services into manageable groups – either logical, or simply hierarchical

<CLICK> User accounts can have permissions to multiple organizations

<CLICK> Quotas are for ensuring resource availability and usage restrictions and can be applied to a single space or a whole organization as needed

Let's Do Some Hands-On!

- Deploy some services
- Build some connections
- Write some code!