Sep. 11, 2019

The Hague,
The Netherlands

CLOUD FONDRY

A Beginner's Journey

- Gloria Dwomoh

SIMPLE TERMS





Explain what [X] is to a 5 year old

[X] = CLOUD

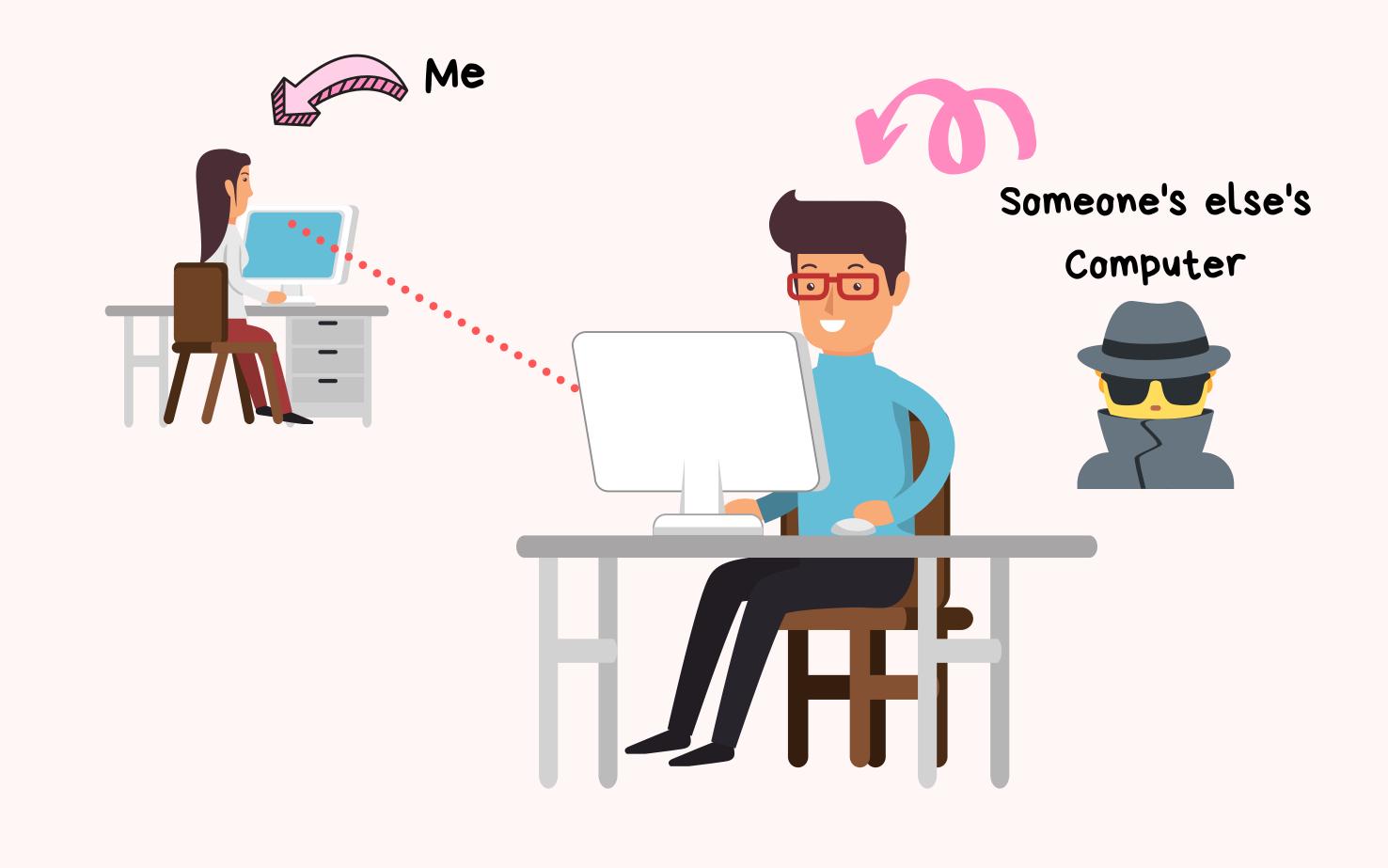


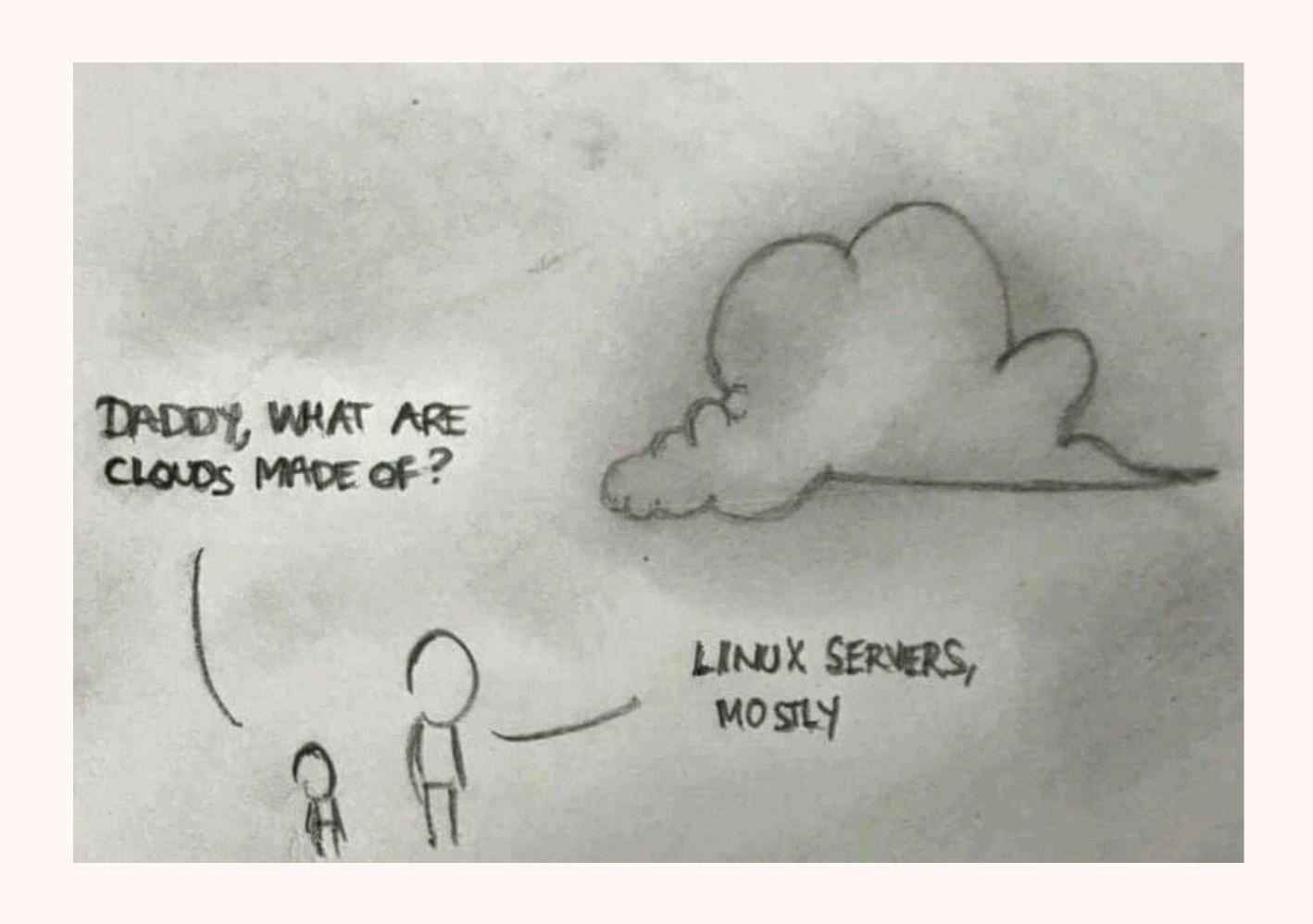


First to mind when asked what 'the cloud' is, a majority respond it's either an actual cloud, the sky, or something related to weather.

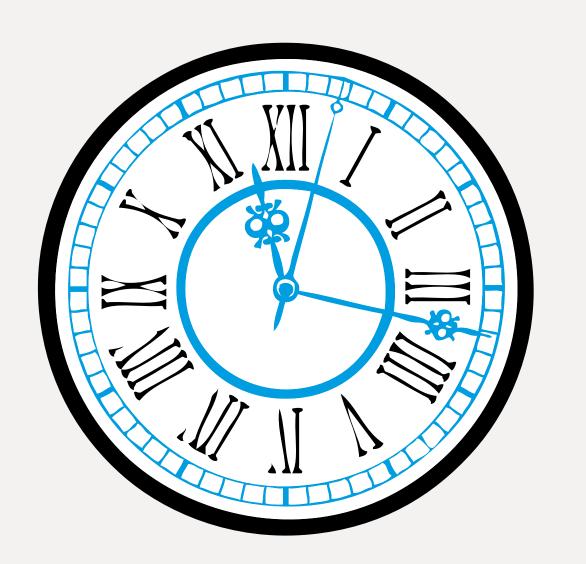
CITRIX CLOUD SURVEY GUIDE (AUGUST 2012)







But first, a quick history lesson....



RIBUTED COMPUTING DISTRIBUTED DISTRIBUTED COMPUTING DISTRIBUTED DI

CENTRALIZED COMPUTING

One central computer does the job

PRE-CLOUD COMPUTING

The Monolith

Greek->
monolithos "made
of one stone," from monos
"single, alone" + lithos "stone"

TRIBUTED COMPUTING DISTRIBUTED DISTRIBUT

DISTRIBUTED COMPUTING

CLOUD COMPUTING



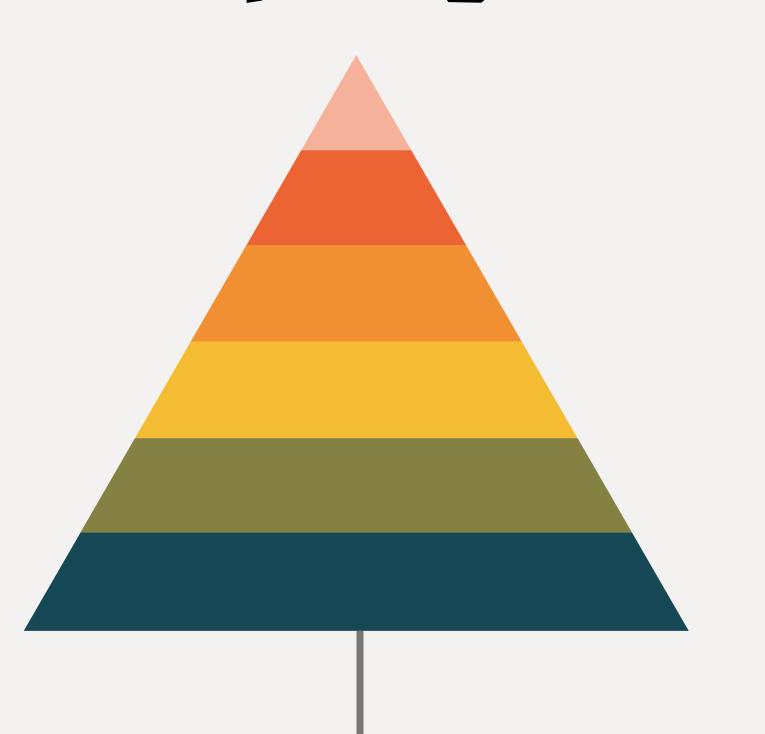
We know what cloud is, but what is cloud computing?

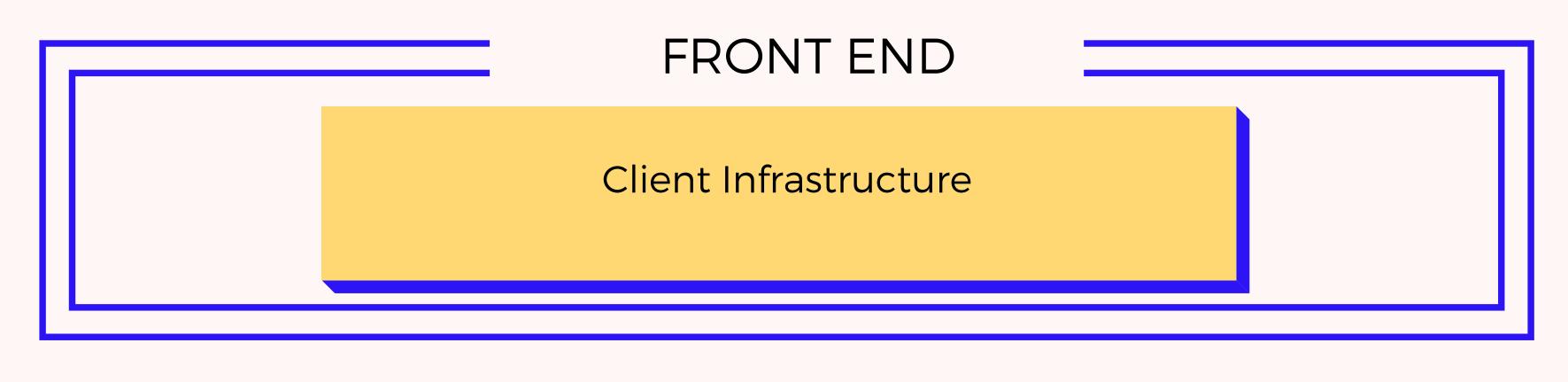


Cloud computing is the ability to deliver services over the internet.

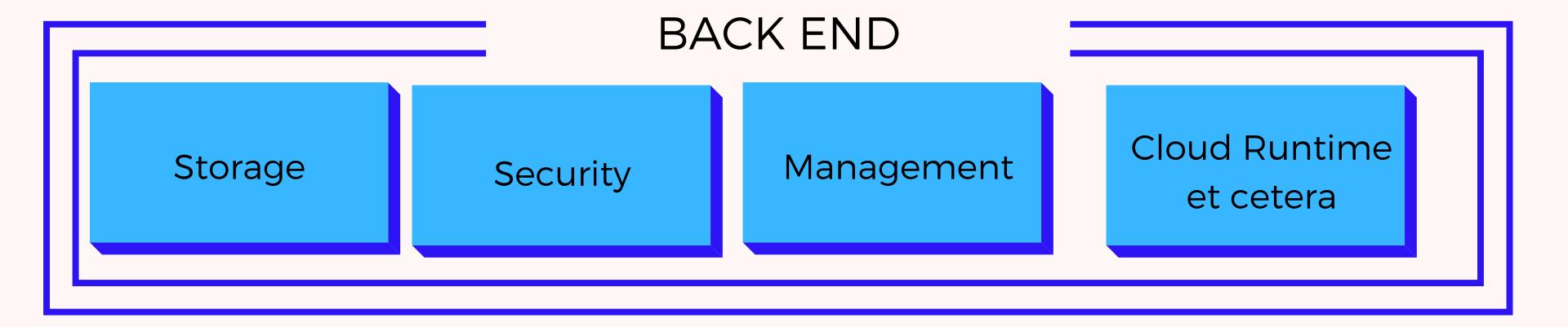


The Cloud Computing Architecture





Cloud Computing Simplified Architecture





The Cloud Service Models





[...] as a Service

Is any service that can be delivered to a vendor/user through the internet usually via the use of cloud computing

[...] as a Service

INFRASTRUCTURE AS A SERVICE

(laaS)

[...] as a Service

INFRASTRUCTURE AS A SERVICE

(laaS)

SOFTWARE AS A SERVICE

(SaaS)

[...] as a Service

INFRASTRUCTURE AS A SERVICE

(laaS)

SOFTWARE AS A SERVICE

(SaaS)

IDENTITY AS A SERVICE

(IDaaS)

[...] as a Service

INFRASTRUCTURE AS A SERVICE

(laaS)

SOFTWARE AS A SERVICE

(SaaS)

IDENTITY AS A SERVICE

(IDaaS)

PLATFORM AS A SERVICE

(PaaS)



PLATFORM AS A SERVICE

(PaaS)

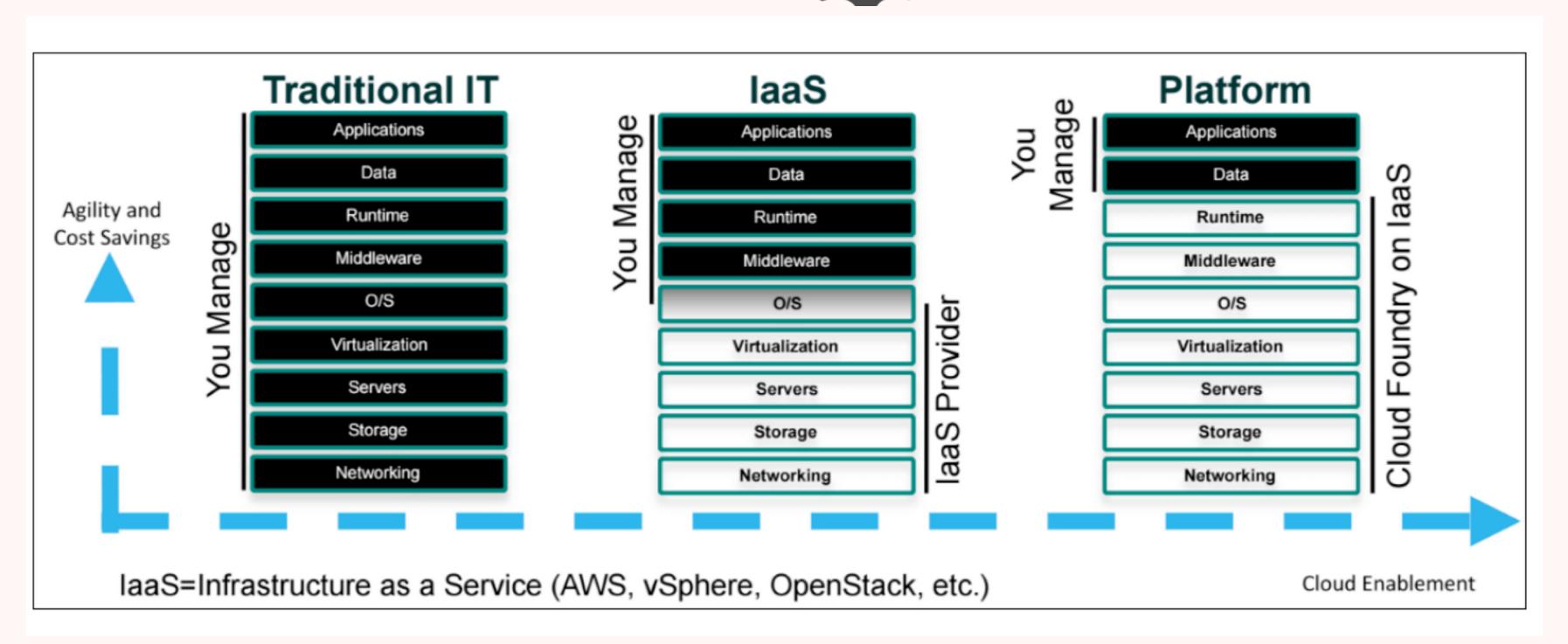
Platform as a service model offers the runtime environment for applications and also offers development/deployment tools required to develop applications. WHAT IS WHAT IS

CLOUDFQUNDRY



An open source cloud application platform for developing and deploying enterprise cloud applications.

CLOUDFQUNDRY



WHAT IS WHAT IS

CLOUDFOUNDRY



CLOUDFOUNDRY

Unifies release engineering, deployment, and lifecycle management.

CLOUD **FOUNDRY**

Creates and deploys virtual machines (VMs) on top of a physical computing infrastructure, and deploys and runs Cloud Foundry on top of this cloud.



Few of the benefits of Cloud Foundry:

·Application portability and auto-scaling.

·Centralized platform administration and logging.

·Centralized logging.

Dynamic routing.

Role-based access for deployed applications.

Provision for vertical and horizontal scaling.

Infrastructure security.

·Support for various laaS providers.

•

How does Cloud Foundry help you focus on application development?

PUSHING CLOUD FOUNDRY (CF) APPLICATION [PROCESS]

The Command Line Interface (CLI) gathers your application's files and uploads them to Cloud Foundry.

CF CONTROLLER

Finds the needed Buildpack.

WHAT IS WHAT IS WHAT IS WHAT IS WHAT

CF CONTROLLER



Manages the entire application life cycle.

PUSHING CLOUD FOUNDRY (CF) APPLICATION [PROCESS]

The Command Line Interface (CLI) gathers your application's files and uploads them to Cloud Foundry.

CF CONTROLLER

BUILDPACK

Finds the needed Buildpack.

Builds an application image (Droplet).

Reports back success or any issues.

BULDPACK

5 MHRT 5 MHRT 5 MHRT 5

Helps to identify necessary dependencies and configure apps.

BULDPACK

bin/detect: determines whether or not to apply the buildpack to an app.

bin/supply: provides dependencies for an app.

bin/finalize: prepares the app for launch.

bin/release: provides feedback metadata to Cloud Foundry indicating how the app should be executed.

PUSHING CLOUD FOUNDRY (CF) APPLICATION [PROCESS]

The Command Line Interface (CLI) gathers your application's files and uploads them to Cloud Foundry.

CF CONTROLLER

BUILDPACK

DIEGO

Finds the needed Buildpack.

Builds an application image (Droplet).

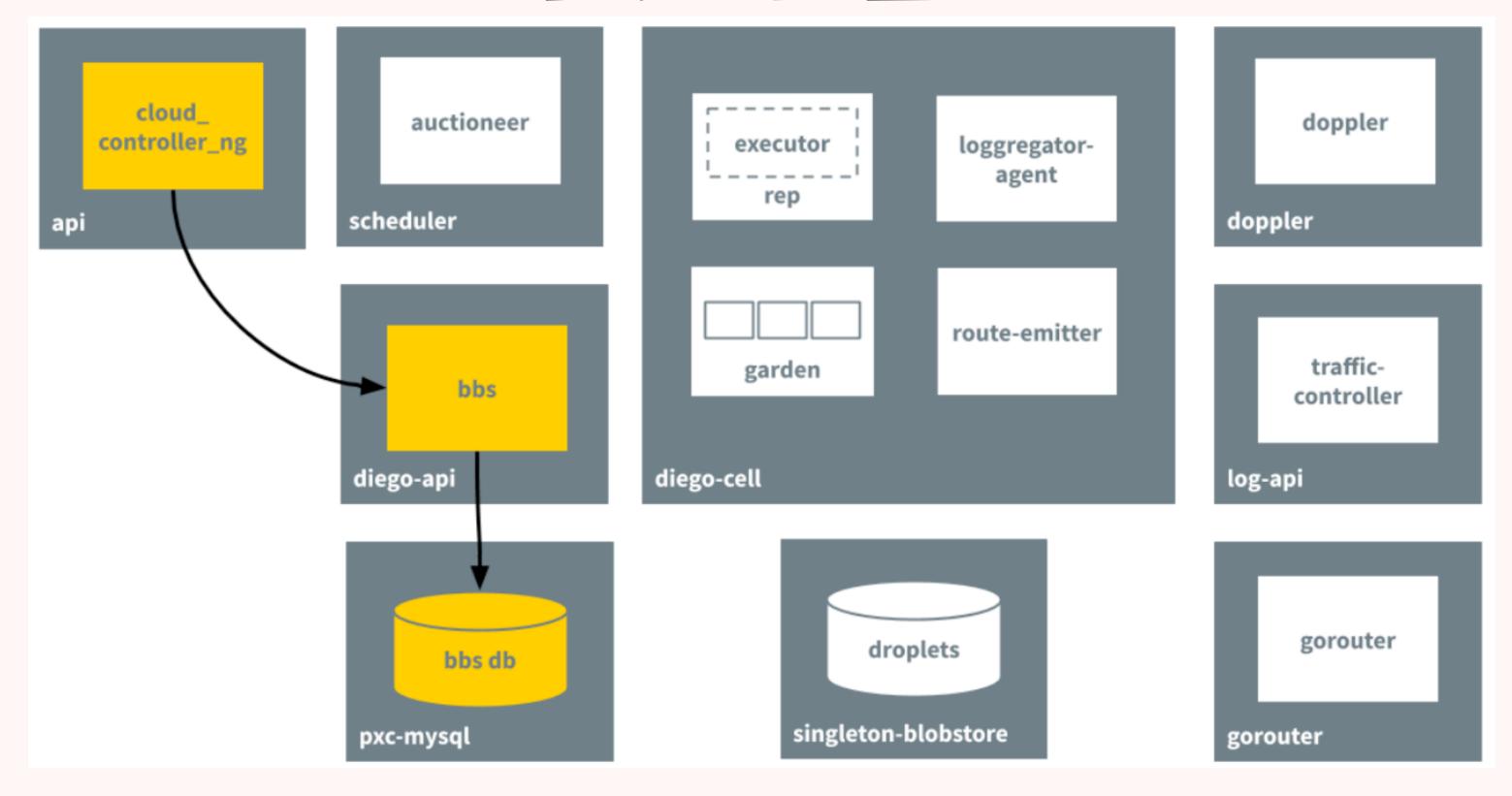
Takes that Droplet and runs it in a Container (Diego Cell).

Reports back success or any issues.

WHAT IS WHAT IS

WHAT IS WHAT IS WHAT IS WHAT IS WHAT

Helps manage app containers.



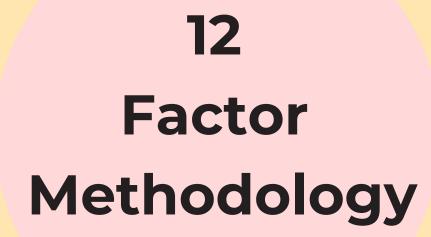


Guidelines of best practices for cloud native application.

Dependencies

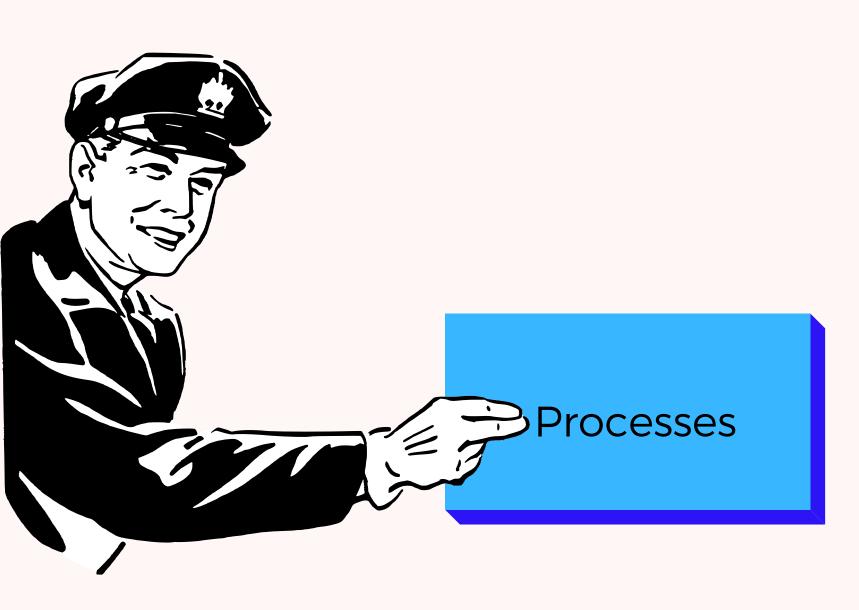
Buildpack

manages





12 Factor Methodology



- Applications need to be able to run on multiple servers.
- Web applications are stateless. Every request to the web server is seen as a new request.
- -Backing services hold state, so we need a type of storage.

Diego cells are great at running stateless apps, but where do we get app databases from?

OPEN SERVICE BROKER API

Developers can provision and bind a particular service to an application.

OPEN SERVICE BROKER API

command: **cf marketplace** you can see available services \$ cf create-service \$ cf bind-service

cf push will create your processes and attach your services automatically if you bound them already.

OPEN SERVICE BROKER API

Updates released in API v2.15:

Improved asynchronous operations

and more...



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Denise Yu || Senior Software Engineer at Pivotal R&D

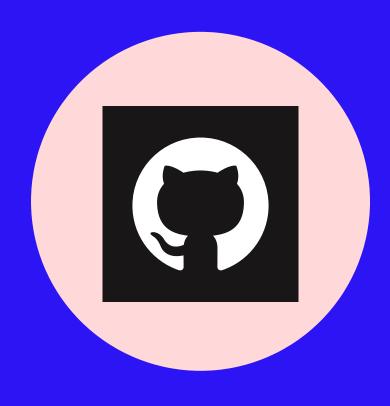
Where to find my slides

http://bit.ly/2lHqZoJ

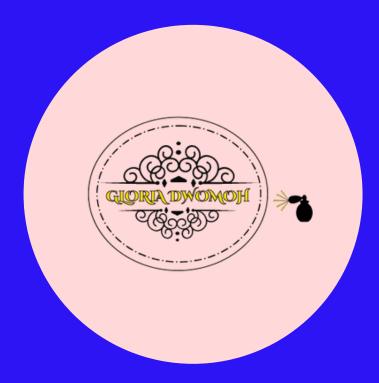
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Sep. 11, 2019

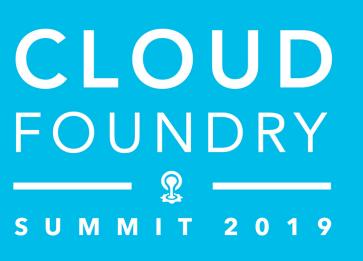
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Resources to read for more information:

Cloud Foundry Documention: https://docs.cloudfoundry.org/

Buildpacks: https://docs.cloudfoundry.org/buildpacks/understand-buildpacks.html

Diego Architecture: https://docs.cloudfoundry.org/concepts/diego/diego-architecture.html

Open Service Broker API v2.15 Updates: https://www.openservicebrokerapi.org/blog/2019/06/21/announcing-open-service-broker-api-v2-15