INPT
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INE2 – Semestre 4 (période 2)
Filière **SUD (Cloud et IoT)**

Développement des applications et services Cloud
Backend as a Service

par
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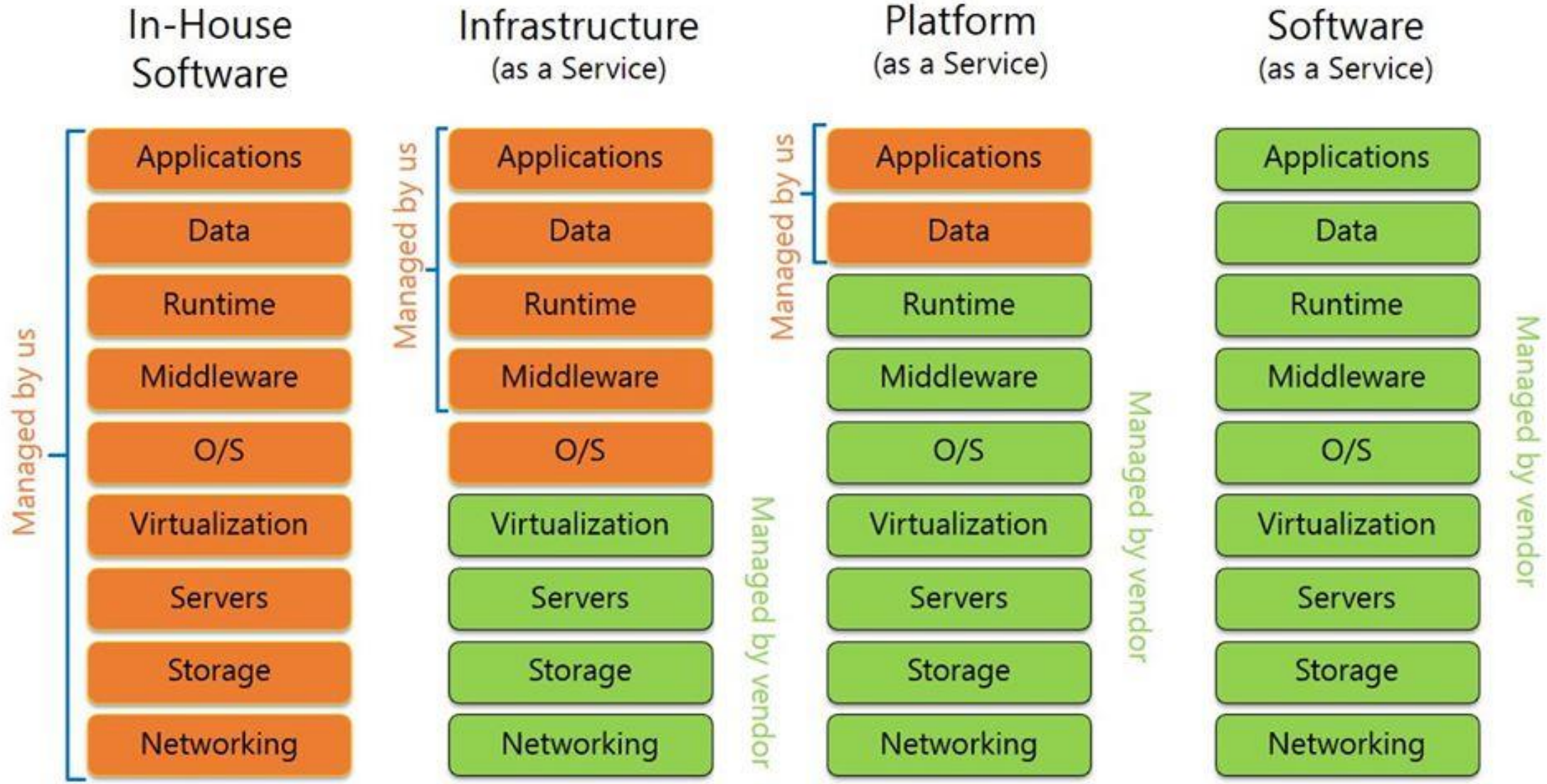
Cloud Computing service models



1 Platform as a Service

What is PaaS ?

Examples of PaaS providers

Platform as a Service

What is PaaS ?

“Is a category of cloud computing services that provides a platform (software + hardware) and environment allowing customers (developers) to **develop**, **manage**, and **scale applications** without the complexity of building and maintaining the infrastructure.”

Platform as a Service

Examples of PaaS providers

App Engine

Elastic Beanstalk

heroku

salesforce

IBM Bluemix™

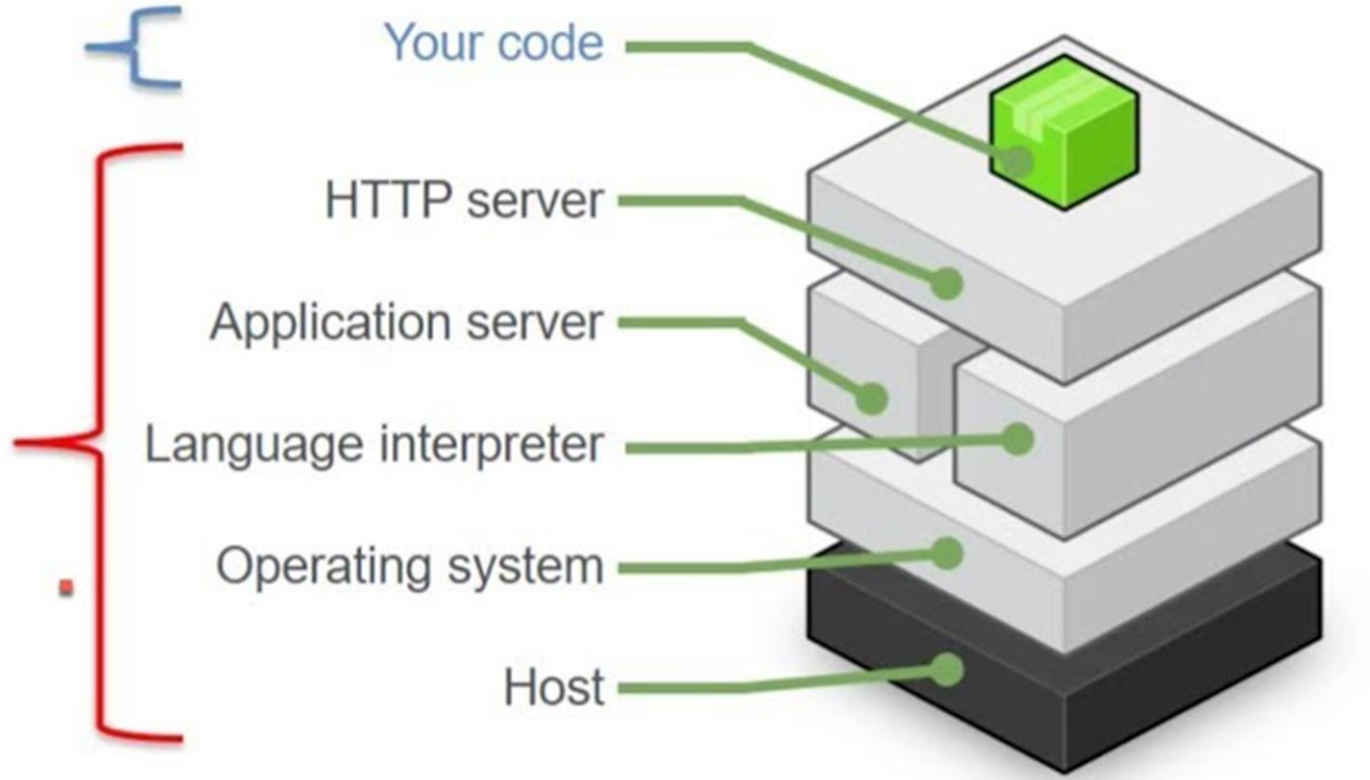
RED HAT® OPENSHIFT

Elastic Beanstalk

On-instance configuration

Focus on building your application

Elastic Beanstalk configures each Amazon EC2 instance in your environment with the components necessary to run applications for the selected platform. No more worrying about logging into instances to install and configure your application stack.



Provided by you

Provided and managed by Elastic Beanstalk

App Engine standard environment

Highly scalable, serverless **web applications**

Easy to manage

No servers to manage
Scale up fast
Scale down to zero
No patches/updates

Easy to develop

Build and test locally
Focus on app code
Versioning
Traffic splitting

Choice of runtimes

Python
Java
Go
PHP
Node.js
Ruby [beta]

What if, in addition to that, we add **digital accelerators to build backend code** ?

2 Backend as a Service

What is BaaS (mBaaS) ?

BaaS vs Custom Backend

Pros & Cons

Two main BaaS services

Backend as a Service

What is BaaS (mBaaS) ?

“Is a model for providing web/mobile app developers with a way to link their applications to **backend cloud services**, withing **SDK**s and **API**s.”

BaaS = PaaS + Features to build backend

mBaaS = Baas for mobile applications

Backend as a Service

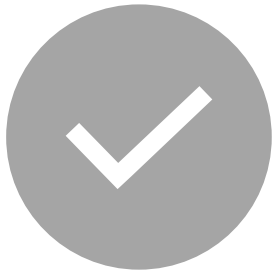
What is BaaS (mBaaS) ?

As examples of Backend cloud services, we name (among others) the following :

- Database
- Storage
- Authentication
- Hosting
- Performance monitoring
- Messaging
- Analytics
- Etc.

Backend as a Service

Why use a BaaS?



BaaS vs Custom Backend

Business reasons

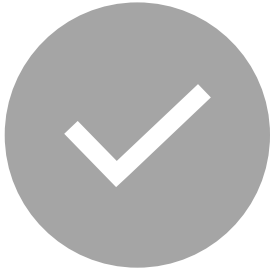
- Outsource cloud infrastructure management
- Assign fewer backend developers to a project
- Save money and decrease the cost of development
- Reduce time to market

Technical reasons

- Provides ready to use features, security settings and backup procedures
- Focus on frontend development
- Exclude redundant stack setup
- No need to program boilerplate code
- Standardize the coding environment
- Let backend-developers program high-value lines of code
- Let you clone apps and run testing environments

Backend as a Service

When to use a BaaS?



BaaS vs Custom Backend

- Making an MVP (Minimum Viable Product)
- Stand-alone apps or applications that require a small number of integrations
- Enterprise apps that are not mission-critical

*** When the purpose is to save effort, time and money**

Backend as a Service

Pros & Cons

Advantages of a BaaS

- Development speed (Lowered Time To Market)
- Development price (cheap)
- Many functionalities in one bundle
- It’s serverless, and you don’t need to manage infrastructure

Disadvantage of a BaaS

- Less flexibility in comparison to custom coding
- A lower level of customization in comparison to a custom backend
- Vendor lock-in for closed source platforms
- Unpredictable costs
- Time-consuming debugging

Backend as a Service

Two main BaaS services

Firebase

AWS Amplify

* This concept was initially introduced by **Parse**

Firebase

[Official website]

[Official documentation]

[Official YouTube Channel]

AWS Amplify

Official website

Official documentation

Playlist from the official YouTube channel

Two more interesting resources

(Recommended as a starter point)

Firebase - Ultimate Beginner's Guide

Firebase vs AWS Amplify

Interesting YouTube channels :

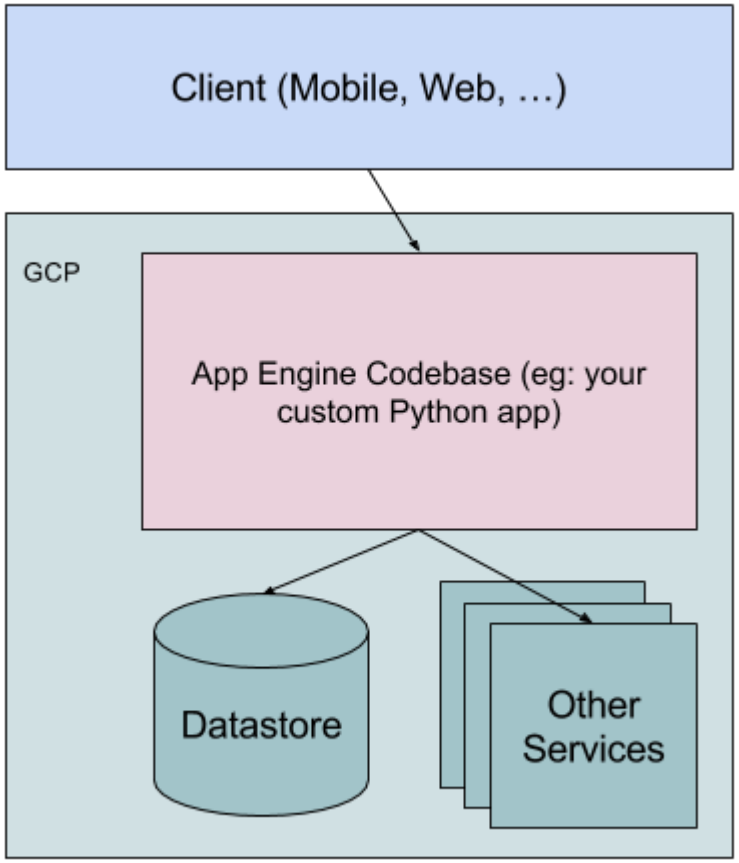
- Nader Dabit (AWS Amplify)
- Fireship (Firebase)

Can a PaaS and a BaaS stitch together in one architecture ?

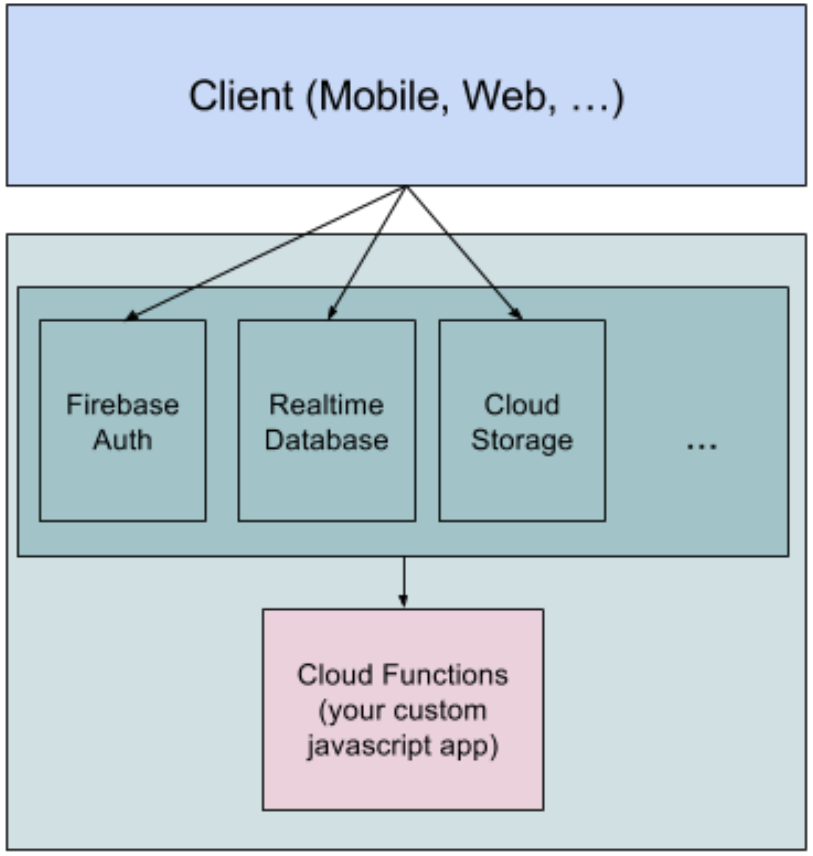
PaaS and BaaS architectures

(The case of Google services)

App Engine, Platform as a Service (PAAS)



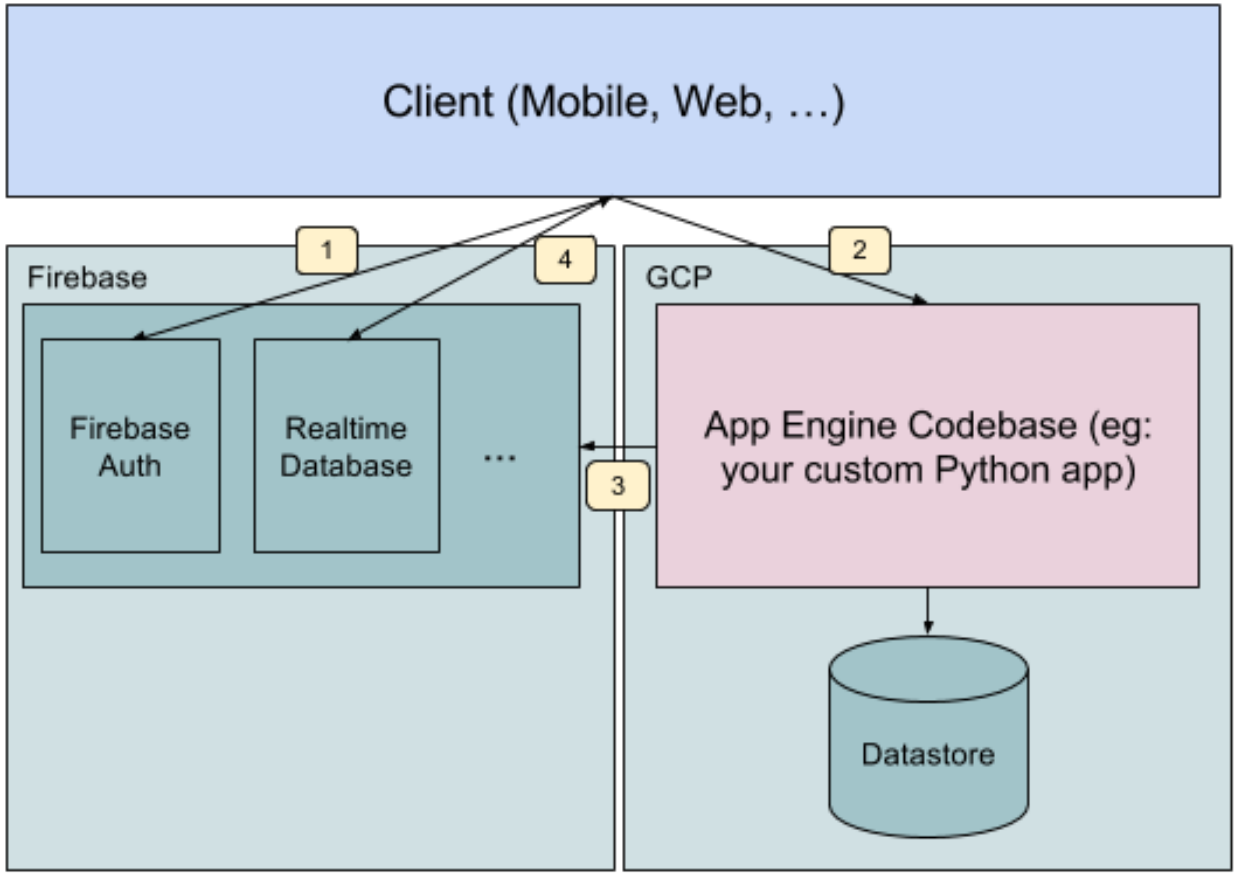
Firebase, Backend as a Service (BaaS)



PaaS and BaaS in one architecture

(The case of Google services)

Firebase + App Engine



1. The Client will authenticate via Firebase Authentication.

2. It'll then have an authentication token to use when talking to App Engine.

3. When significant events happen in App Engine that we want the client to know about, we'll push the info into Firebase Realtime Database.

4. The Firebase Realtime Database will push changes up to the client. The client can also query the Realtime Database as desired.

Have you any Questions ?

Thank you