Banking is necessary. Banks are not.

Bill Gates, 1994

Agenda

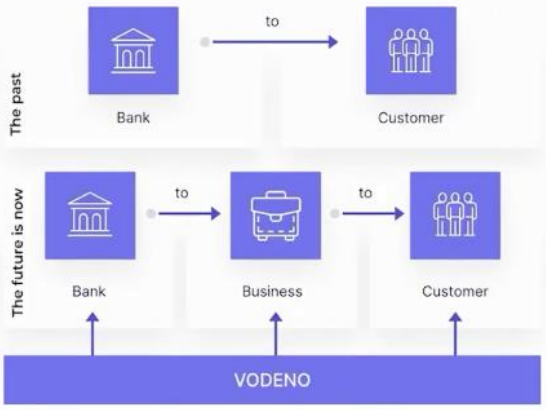
1. Vodeno - the Short Story
2. The Future of Banking
3. Technology challenges
   - BaaS API
   - Infrastructure
   - Cloud costs

Vodeno - the short story

2018	2019	2019	2020	2021	2022
Vodeno started to be developed. VODENO	Vodeno Cloud Platform is ready for Friends & Family phase	Banca Monte Paschi Belgio was acquired. Aion was born. The whole transformation takes only 5 months	Vodeno becomes a Google partner: - ISV/Technology Partner - Reseller Partner - Service Partner *bit.ly/VodGooglePartner*	Vodeno helps Aion to open new countries (Poland and Germany)	Vodeno Platform is ready to offer technology for "Banking as a Service" clients *bit.ly/VodSolution*

The Future of Banking

Disruptive Change in Banking since banking digitalization



Bank monopoly on distribution on banking services.
Implementation time - months / years

Banking as commodity offered by multiple businesses.
Implementation time - days / hours

Vodeno provides solutions supporting all parties involved

The future is now

Unit+

Moneyflow

Tricount

Metro FS

bit.ly/StoryUnitPlus

bit.ly/StoryMetro

BaaS API

The goal

Vodeno Public API - to have consistent and efficient API for BaaS partners to allowing them cooperating with us in Self Service mode

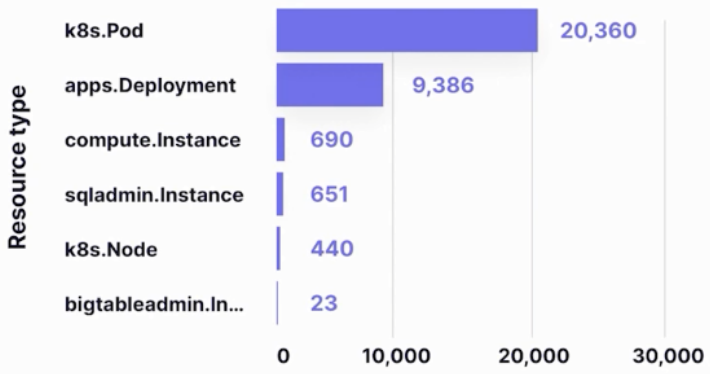
Aion Bank era

- No Public API for external clients / except mandatory ones, i.e. PSD2

Banking as a Service era

- Public API with dedicated documentation

Cloud Infrastructure in Numbers



Multiregional setup (3 GCP regions)

- Belgium (europe-west1)
- Netherlands (europe-west4)
- Frankfurt (europe-west3)

Vodeno BaaS Clients Countries

- Belgium (opened in 2019)
- Poland (opened in 2021)
- Germany (opened in 2021)
- Sweden (opened in 2022)

Technology challenges

Cloud Infrastructure & Regulated business

Prepare for a region's outage

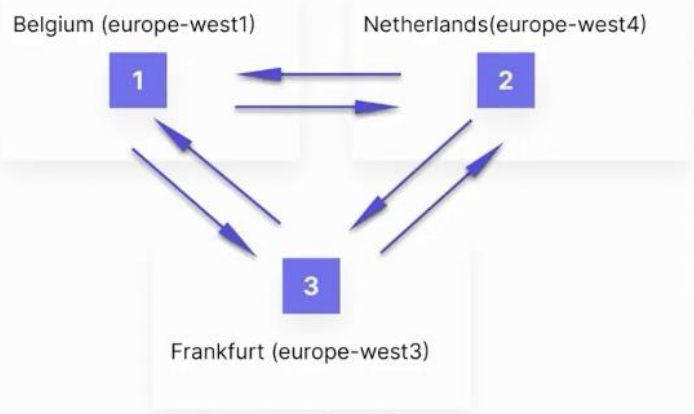
- Multiregional setup (3 GCP regions)
  - Belgium (europe-west1)
  - Netherlands (europe-west4)
  - Frankfurt (europe-west3)

Exit plan

- Tools/Technology ready to use in on-premises or another cloud provider

Networking shared VPC

- Host Projects
- Private GKE
- Private Cloud SQL



Technology challenges

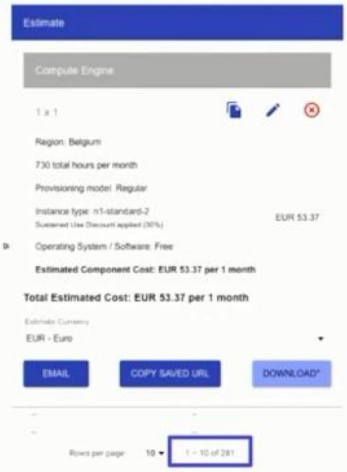
Costs

"Pay as you go" model is fine, but ....

- Do not rely only on cloud costs calculators
- Do not omit any, even the smallest, part (networking, storage)
- Do not rely only on cloud billing - "trust but check" (Cloud SQL disks type case)

SKU for Compute Engine

Compute Engine Calculator



So how to improve this? Implement cost model from the very beginning

Technology challenges

Costs models

Proactive
Bottom to Top

Using cloud calculator try to estimate and predict your future costs; for small setup it's possible, but for medium/large environment it's VERY hard (high inaccuracy) - it's hard to estimate all "hidden" costs (i.e. network traffic).

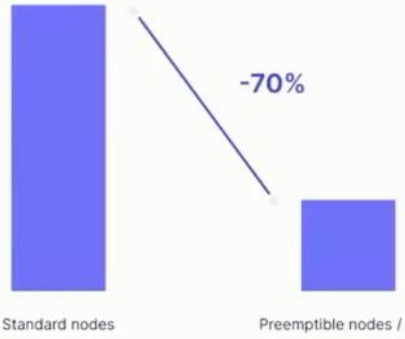
In ideal world (for the same parameters) those two calculators should has discrepancy < 5%.

Reactive
Top to Bottom

Using you billing allocate costs to proper applications / business units / costs centers; you will not miss anything (any cost) as you have final billing.

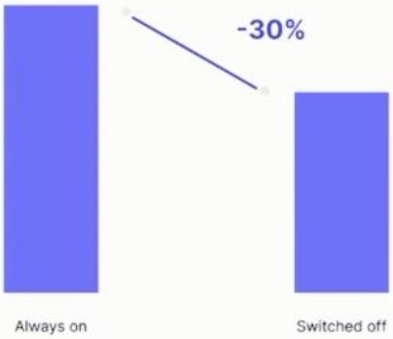
You can't have your cake and eat it - can’t you?

Preemptible VMs are Compute Engine VM instances that are priced lower than standard VMs and provide no guarantee of availability. Preemptible VMs offer similar functionality to Spot VMs, but only last up to 24 hours after creation.



You can't have your cake and eat it - can’t you?

Switching off environments at night or on weekends. i.e. DEV every night and weekend, TEST every weekend.



You can't have your cake and eat it too - can you?

Spanner to Cloud SQL Migration

Cloud Spanner

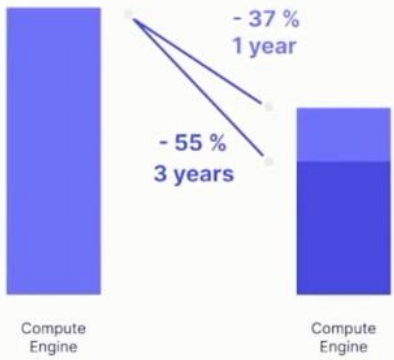
- Structured data
- Highly available
- Strongly consistent
- CAP theorem says impossible
- Globally distributed
- Horizontally scalable
- Cost effective at scale

Cloud SQL

- Traditional SQL Server
- Vertically scalable
- Managed backups
- Easy to setup replicas
- Types:
  - MySQL
  - Postgres
  - SQL Server

You can't have your cake and eat it too - can you?

CUD - Committed use discounts, discounted prices in exchange for your commitment to use a minimum level of resources for a specified term.



But cloud also gives you flexibility

Something that might not be possible in the on-prem installation might be executed in the cloud.

Spinning up environment for load / performance tests might be challenging.
We wanted to “onboard” to Vodeno Cloud Platform 7 millions of end customers.
In traditional way (Data Center) this might be challenging or even not possible - due to lack of resources or long period of time for new hardware delivery and installation.

In the cloud we just requested for higher resources and that was it. We were able to perform the test.

But still, remember about costs ...

About us

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Bill Gates
Software developer, investor, entrepreneur

50 yrs in tech; launch of co-founder and former CEO of Microsoft