Bringing serverless to containers with Google Cloud Run

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Google Cloud

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Lily started the first Pet Theory clinic 12 years ago

Lily, veterinarian,
Founder of Pet Theory

Pet Theory

IT growing pains...

Why can’t I change my appointment online?

Michael, client

The appointment system is down...

Patrick, IT support

I have to call insurance companies all the time.

Deirdre, veterinarian

I wasn’t able to send any invoices yesterday. The phone just kept ringing.

Lisa, receptionist

Solid IT is a requirement for my business.

Lily, veterinarian,
Founder of Pet Theory

As a pilot project, let’s fix the invoice problem first.

Ruby,
Consultant

There are two paths to modern cloud systems.

Containers: Docker, Kubernetes

Fine-grained control.
Use any language, binary or library.
Run your code in many places.

Setup and maintenance work.
Provision resources ahead of time.
Pay for idle resources.

Serverless: FaaS, PaaS

No infrastructure management.
Fully managed security.
Pay only for usage.

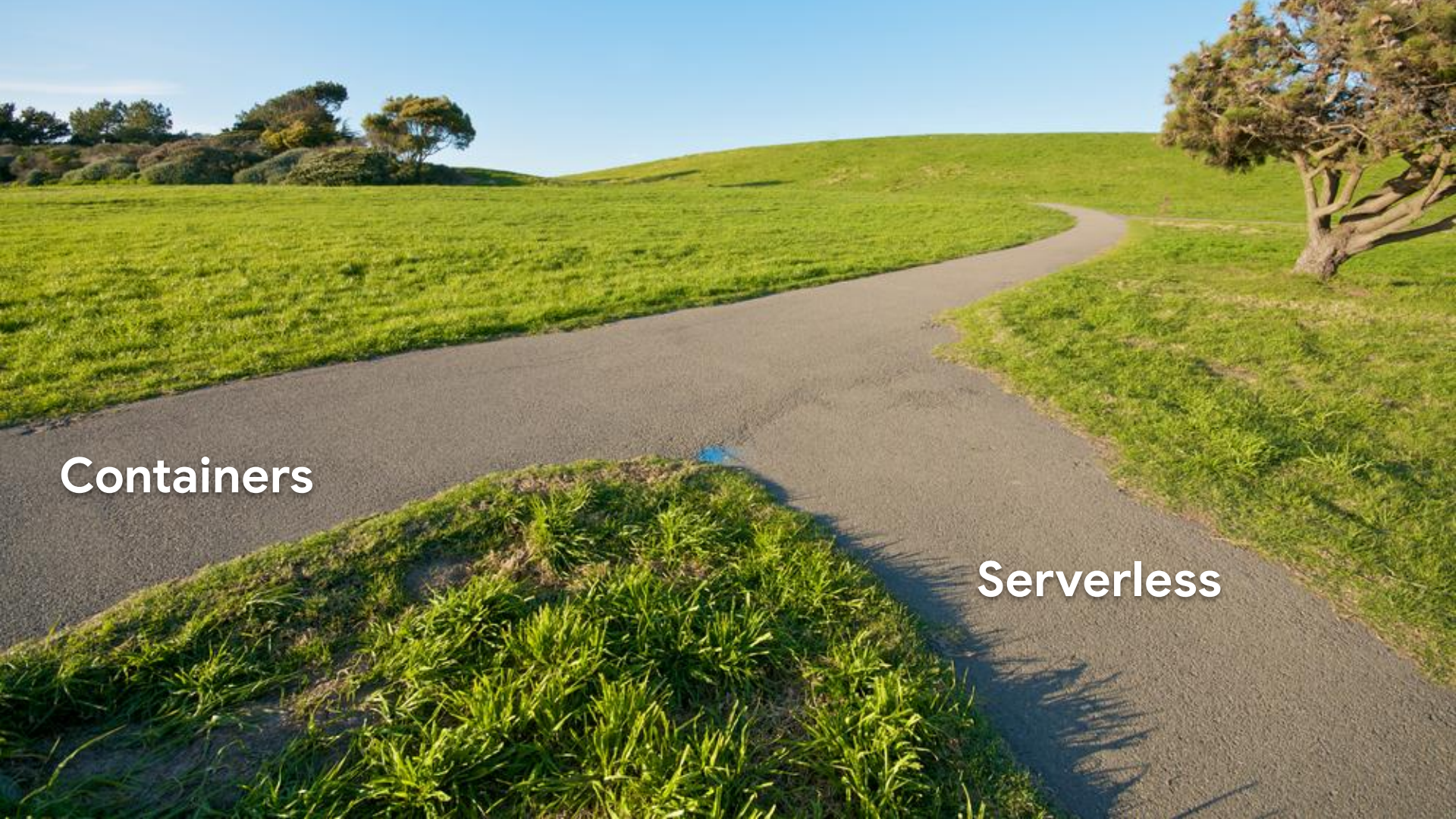
App is not portable.
Can’t use any language.
Can’t use any binary or library.

What if we choose the wrong path?

Patrick, IT support

I have read about a new trend in cloud computing...

Ruby, Consultant


Containers
Serverless

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The big picture

Open source project		Run it hosted on Google Cloud Platform	Useful for
Knative serverless platform	→	Cloud Run	Events/web + containers
Kubernetes container manager	→	Kubernetes Engine	Containerized applications
Linux operating system	→	Compute Engine	Existing, stateful applications

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As a pilot project, let’s fix the invoice problem first.

Ruby,
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Our on-prem system generates invoices as DOCX files. Lisa used to manually convert them to PDFs, but I found a Python script that does it.

Good work! Let’s review the script.

Patrick, IT support

Ruby, Consultant

```
# app.py
...
cmd = "libreoffice --headless --convert-to pdf {}".format(filename).split(' ')
p = subprocess.Popen(cmd, stderr=subprocess.PIPE, stdout=subprocess.PIPE)
stdout, stderr = p.communicate()
...
```

You got a problem with that?

Patrick, IT support

Wait a minute - the Python script is using LibreOffice to create PDFs?

Ruby, Consultant

Container

app.py

LibreOffice

Cloud Storage lib

Flask web framework

gunicorn web server

Let's package it up in a container.

Google Cloud

Demo

pdfgen-cqwnsh3hvq-uc.a.run.app

Google Cloud

Excellent! My staff are asking if cloud computing is sustainable.

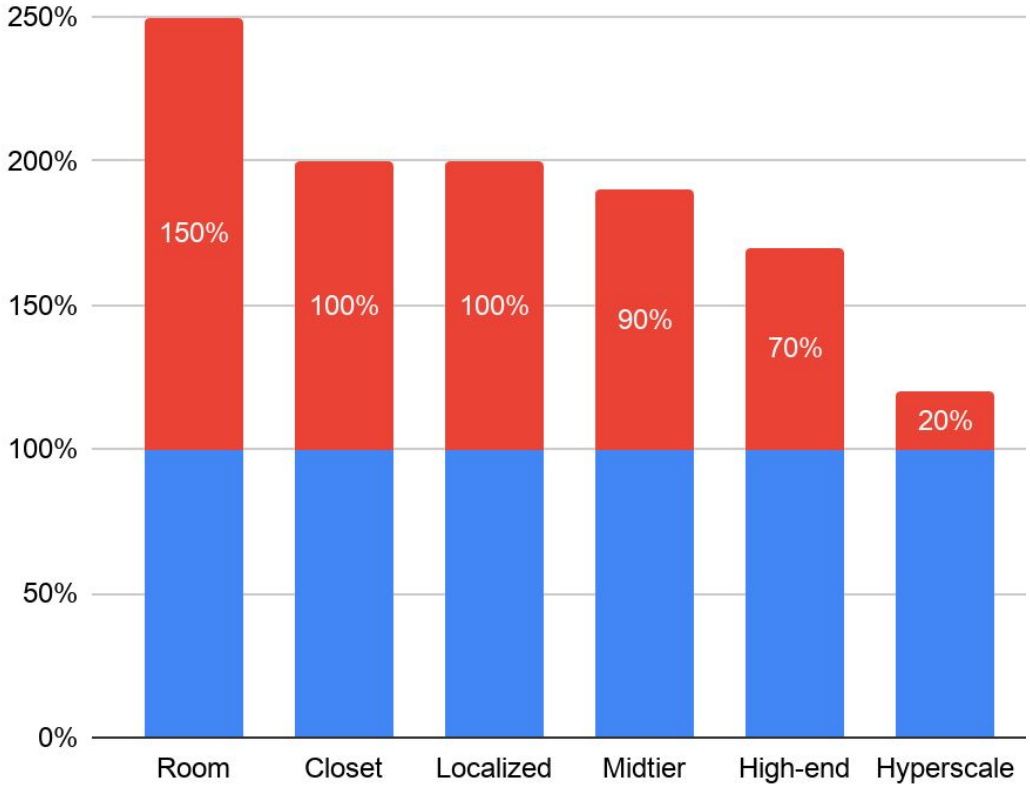
Let me do some research...

Lily, veterinarian,
Founder of Pet Theory

Ruby,
Consultant

Z

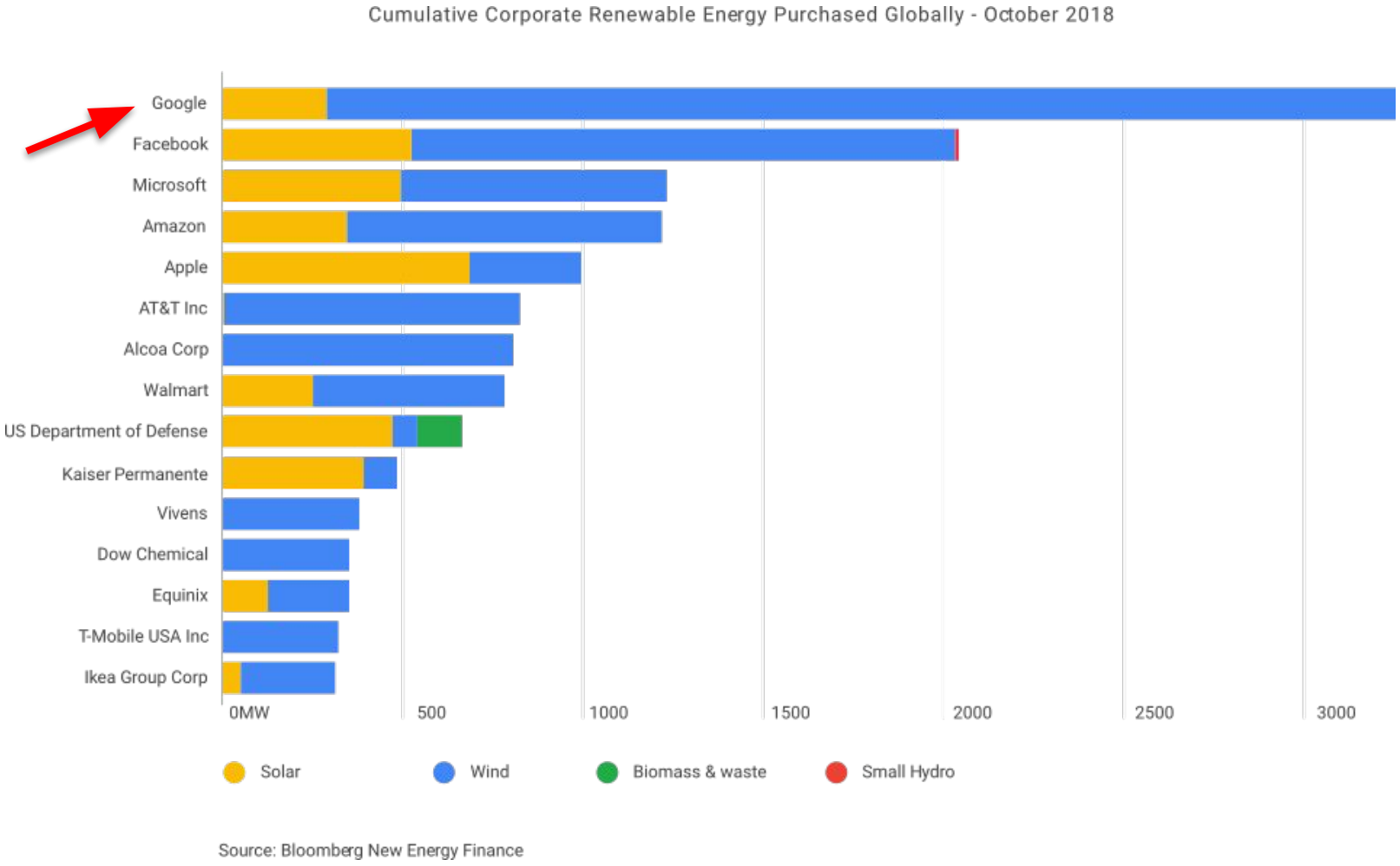
Power Usage Efficiency (PUE)



Sources

First six bars: United States Data Center Energy Usage Report, www.osti.gov/servlets/purl/1372902/

Last bar: Google website, google.com/about/datacenters/efficiency/internal



Source: Bloomberg New Energy Finance

Looks like cloud computing fits with Pet Theory's values.

Lily, veterinarian,
Founder of Pet Theory

I am happy that you are happy.

Ruby,
Consultant

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