



Web API Design

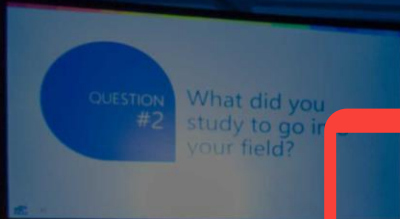
Making Apps that Get Along

Jeremy Likness, Cloud Developer Advocate, Microsoft





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Jeremy Likness

Dev. Advocate, Microsoft



/jeremylikness



@JeremyLikness

Developer

20 years as a professional developer. Worked at product companies, start-ups, self-started business, one publishing company, and consulting firms. Managed teams since the late 90s. Wow. That's a long time ago!

Author and Trainer

Prolific writer for print magazines with four published technology books. National speaker, video trainer, and mentor. Personal mission: empower developers to be their best!

Hiker

Passionate about fitness. Former certified personal trainer and specialist in performance nutrition. Regularly CrossFit at 5:15am, run, hike, summit tall mountains and maintain a 100% plant-based diet.

Agenda

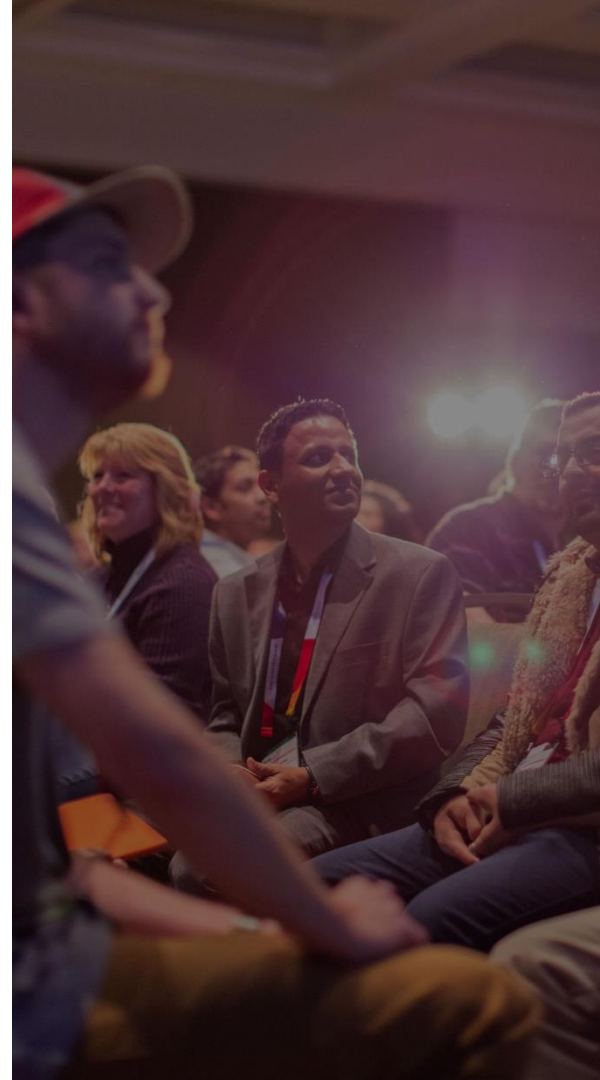
The goal of this workshop is for you to leave with a clear understanding of how to approach API design for web-based endpoints.

- Introduction
- Examples "In the Wild"
- WCF, REST, OData, and GraphQL
- Fundamentals of REST Design
- Advanced REST Design
- Swagger
- Wrap-up



Module One

Introduction



What are APIs?

Contracts

- Interface
- Signature
- Expectations
- Validations
- Exceptions
- Identity
- Access
- Discovery

System Level

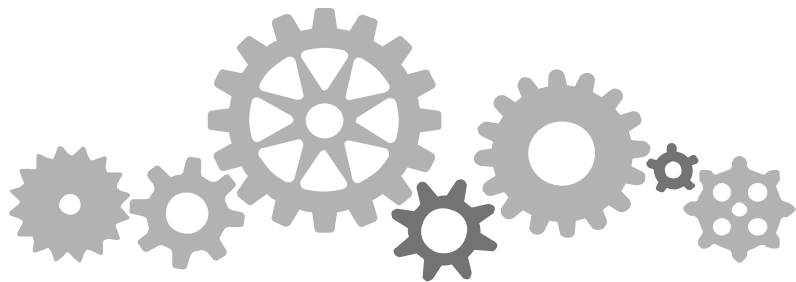
- Win32
- POSIX
- iOS
- Android
- WinRT
- UWP

Inter-process

- Pipes
- DCOM
- p/Invoke
- Sockets
- Signals

Framework

- Azure SDK
- Python SDK
- Angular
- React





...and then came the web

“The Internet is just a world passing around notes in a classroom.” – Jon Stewart

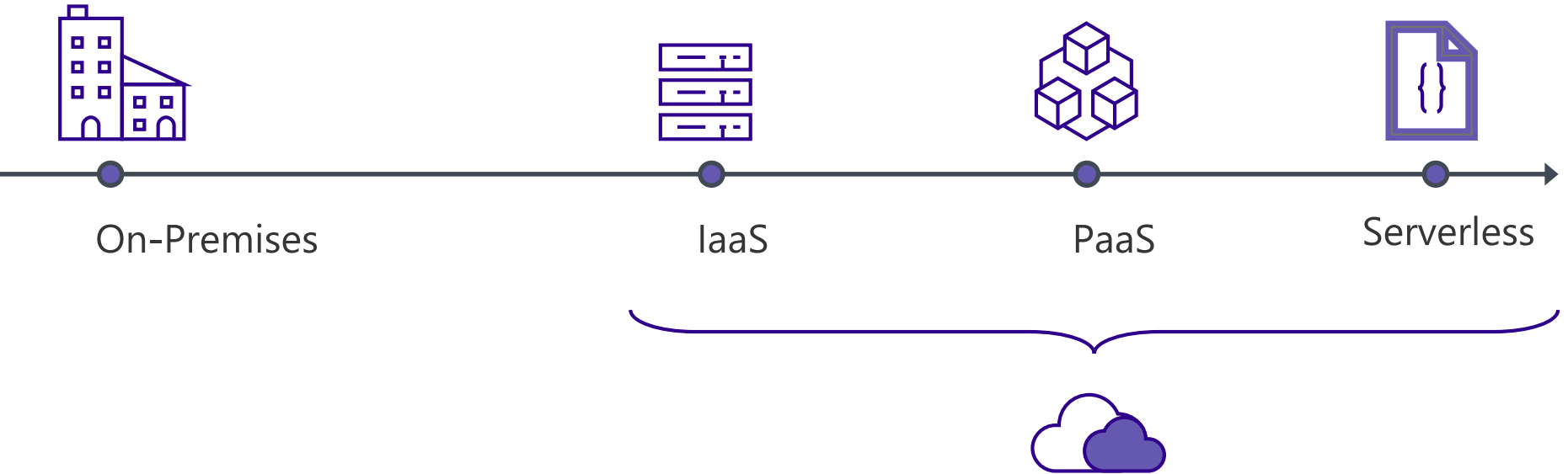
- Common Object Request Broker Architecture (CORBA)
- Object Linking and Embedding (OLE) Remote Automation
- Distributed Component Object Model (DCOM)
- Windows Communication Foundation (WCF)
- Representational State Transfer (REST)
- Open Data Protocol (OData)
- Graph Query Language

From Pipes to SOA to Microservices

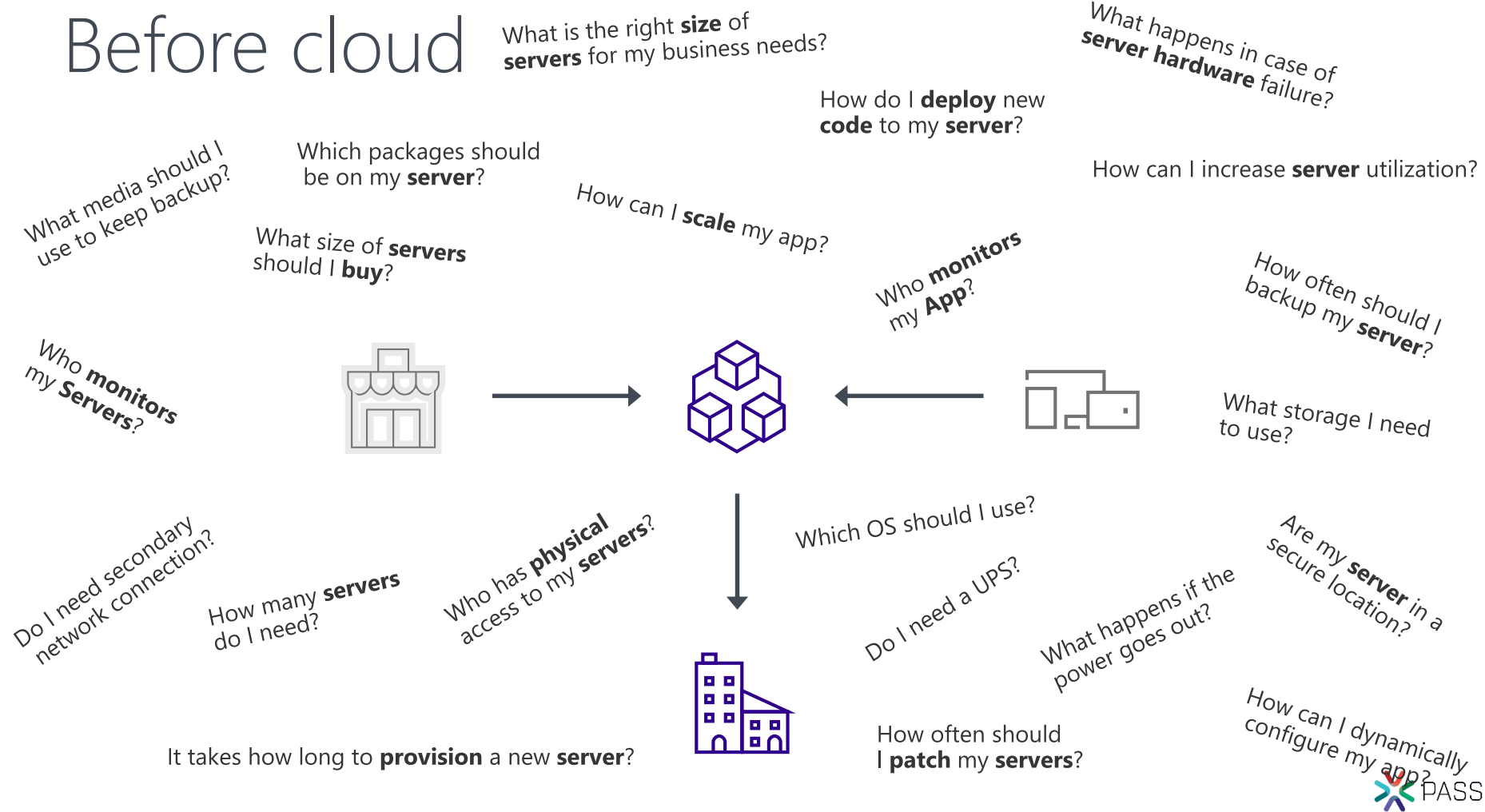
The cloud has transformed how we approach APIs.

- Level of effort to connect services continues to shrink
- SOA: software for hire
- Microservices: a way to approach solutions but not the solution itself
- Containers: “starving the beast”
- Serverless: the ultimate realization of “do what you know”
- Event Grid: glue for the cloud

The “evolution” of application platforms



Before cloud

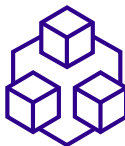


Then came IaaS—table stakes for digital businesses

What is the right **size** of **servers** for my business needs?

How can I increase **server**
utilization?
How many **servers** do I need?

How can I **scale** my app?



How often should I **patch** my **servers**?

How often should I backup my **server**?

Which packages should be on my **server**?



How do I **deploy** new **code** to my **server**?

Which OS should I use?

Who **monitors** my App?

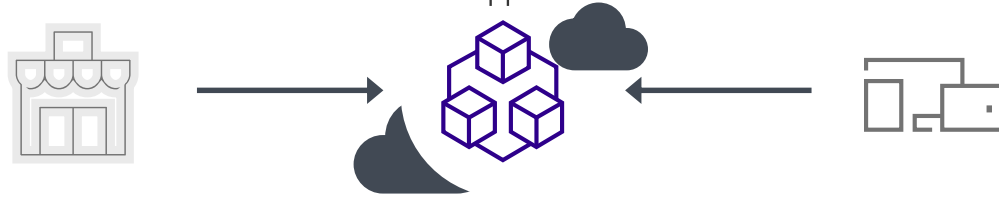
Then PaaS, critical for digital transformation

What is the right **size** of “**servers**” for my business needs?

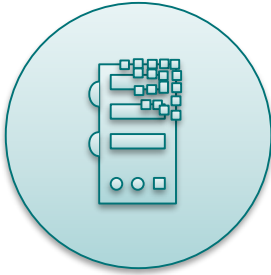
How can I increase “**server**” utilization?

How many “**servers**” do I need?

How can I **scale** my
app?



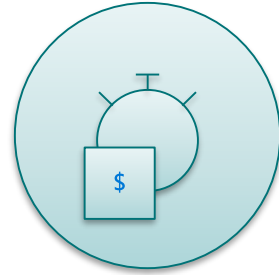
What is Serverless?



Abstraction
of servers



Event-driven/
instant scale



Micro-billing

Do more. Serverless.



DevOps
Productivity



Focus on
business logic



Faster time to
market

Introducing Functions

Code



Azure Functions



Events



What do functions have to do with APIs?

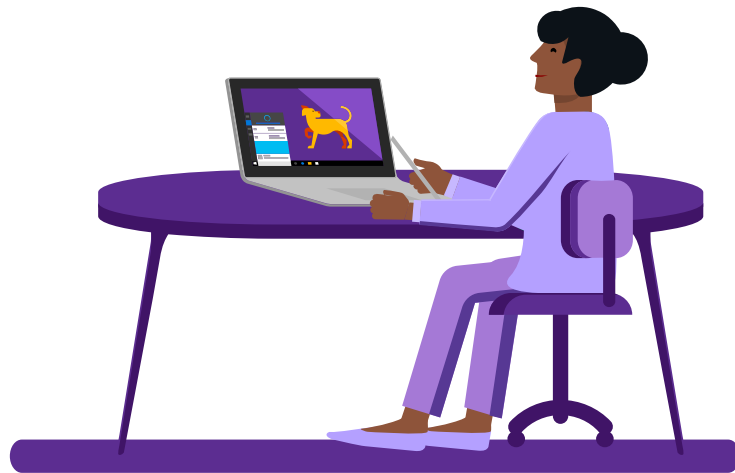
Everything.

- The *event* is an HTTP/HTTPs web request
- The *code* is the implementation of the API
- It is important to think of APIs in terms of modern microservices architectures
- Every major cloud platform has a concept of events + code ("functions")
- Welcome to the serverless revolution!

What is API Design?

“The power of intention.”

- Discovery
- Comprehension
- Usability
- Flexibility
- Consistency
- Security
- Integrity



Common Challenges

Great Power. Great Responsibility.

- Service location and introspection
- Authentication and authorization
- Platform dependencies
- Scoping requests and responses
- Complex object graphs and aggregate roots
- Transactions



Thank You

“We are Just Getting Started!”

@JeremyLikness

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