

Serverless,
build apps
faster
without
managing
infra





Most Valuable Professional



MVP Microsoft®
Most Valuable
Professional



A portrait photo of a young man with dark hair, smiling, wearing a black t-shirt. He is standing outdoors on a paved path with green grass in the background.

Award Categories
Microsoft Azure

First year awarded:
2022

Number of MVP Awards:
1

Wittawat Karpkrikaew (Ponggun)

Thailand

Moung, Khon Kean

Development Manager at WRM Software | Microsoft Fanboy | Long-Term Remote Work

Biography

Development Manager at WRM Software | Microsoft Fanboy | Long-Term Remote Work





Thada Wangthammang, (Mild) Site Reliability Engineer

Work at:

T.T. Software Solution: tt-ss.net

WRM Software: wrmsoftware.com

Write Blog at:

thadaw.com since 2015

medium.com/@thadaw

FB Admin Group at:

TypeScript Thailand

.NET Thailand

Azure Thailand

We are caring by sharing



codesanook.com



.NET Thailand



Azure Community Thailand

 Medium



T.T. Software Solution

Web developers with ASP.Net, MSSQL,
Azure working in Remote Office 100%



[.NET Thailand](#)



[dotnetthailand / dotnetthailand.github.io](https://dotnetthailand/dotnetthailand.github.io)

^ .NET FAQ

^ Web Frameworks

^ Cloud & Hosting

▼ Coding standard & naming

▼ ASP.NET Core

▼ Amazon Web Services (AWS)

▼ Debugging

▼ Express

^ Microsoft Azure

▼ Docker

▼ Gatsby

Azure CLI

▼ .NET

▼ nopCommerce

App Service

▼ Fundamentals

▼ Orchard Core CMS

Azure Functions

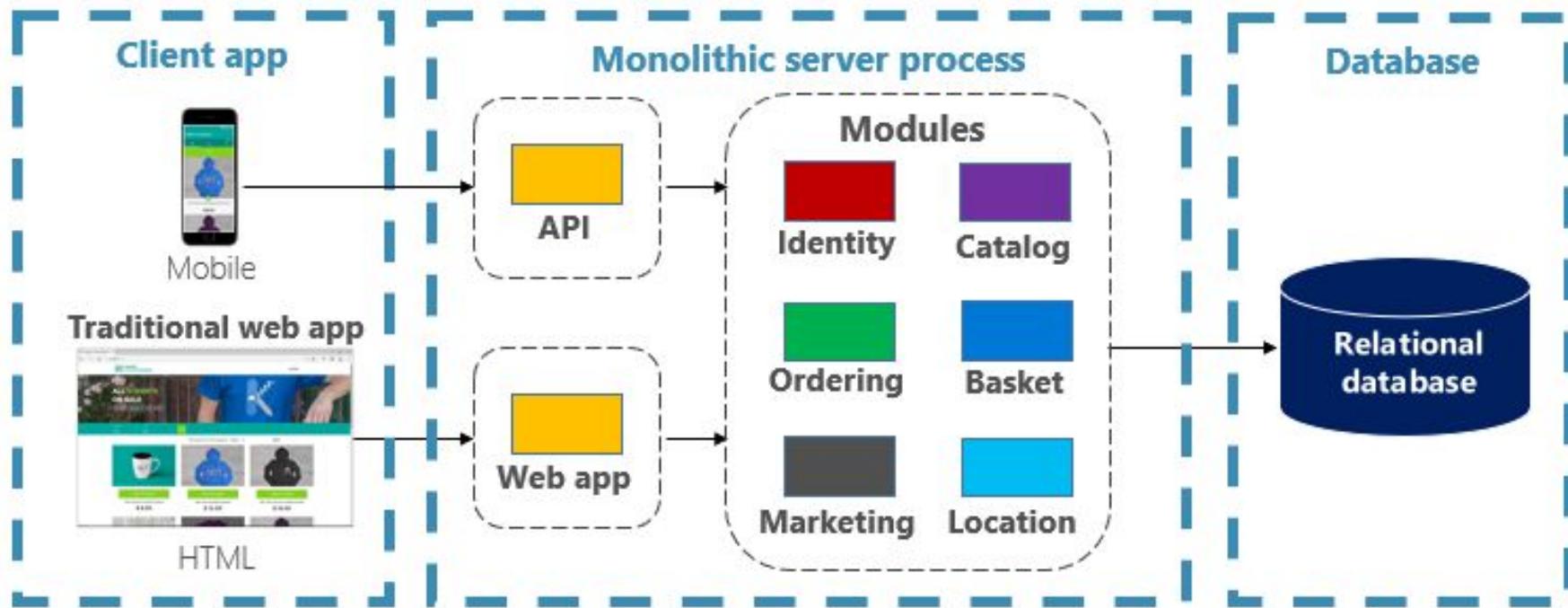
▼ Libraries & Frameworks

Shared web hosting



Scan to download the presentation

eCommerce application from past 15 years



Traditional monolithic design - [Introduction to cloud-native applications | Microsoft Learn](#)

ข้อดีของ Monolith

- Build
- Test
- Deploy
- Troubleshoot
- Vertically Scale

ข้อพึงระวังของ Monolith เมื่อระบบเริ่มใหญ่ขึ้น

- ระบบโตมากจน Dev 1 คนไม่สามารถเข้าใจทั้งหมดได้
- การแก้ไขชิ้นงานเล็กๆ แต่ต้องปิดทั้งระบบเลย
- แก้ไข Code ใช้เวลานานขึ้น บาง Feature ไม่เสถียร ก็กระทบทั้งระบบเลย
- เห็น Framework ใหม่ก็ได้แต่มองตาปริบๆ
- "Quick Fixes." เต็มไปหมดเลย

Cloud Native

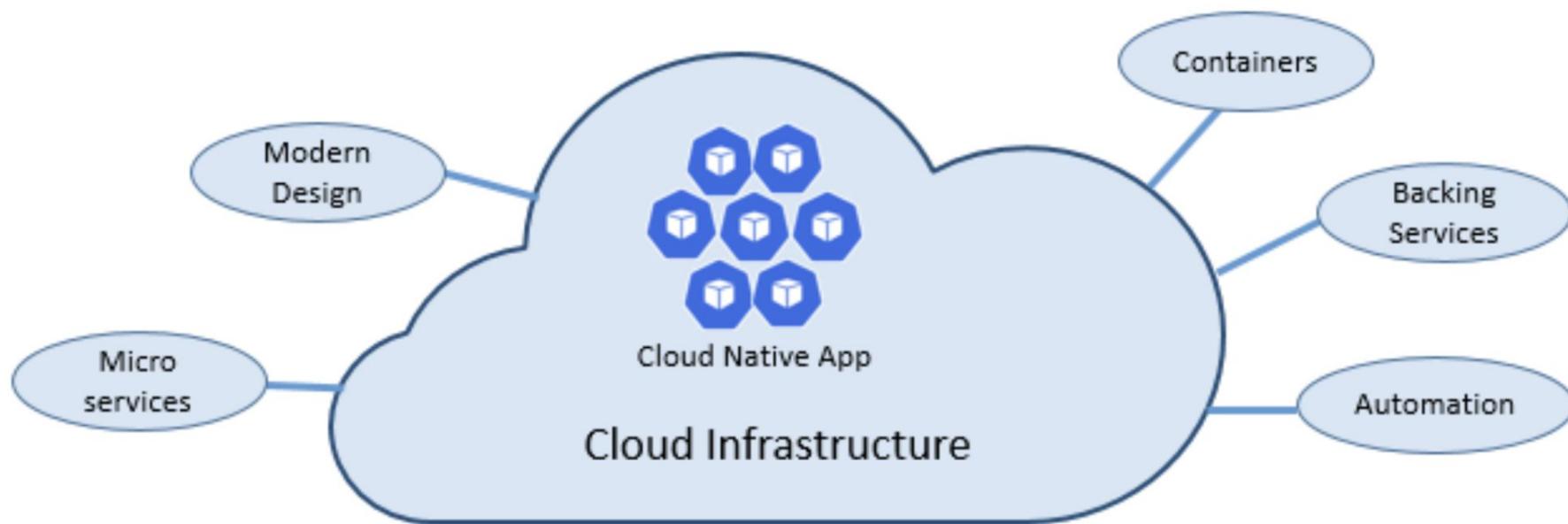
ช่วยให้องค์กรสามารถที่จะพัฒนาและดูแลระบบที่มีความสามารถในการรองรับปริมาณการใช้งานจากลูกค้าจำนวนมากได้ เพราะมีความยืดหยุ่นในการดูแลรักษา เช่น

- สามารถที่จะขยายระบบให้เพียงพอกับลูกค้าในแต่ละช่วงเวลา (Scalable)
- รองรับการดูแล Infrastructure ทั้งแบบ On-premise หรือการทำงานร่วมกับ Cloud Deployment Model ทั้งแบบ Public/Private/Hybrid Cloud
- ระบบแต่ละส่วนมีความยืดหยุ่นจากกัน
- รองรับการพัฒนาด้วยเทคโนโลยีที่หลากหลายมากขึ้น
- ลดเวลาในการติดระบบลง

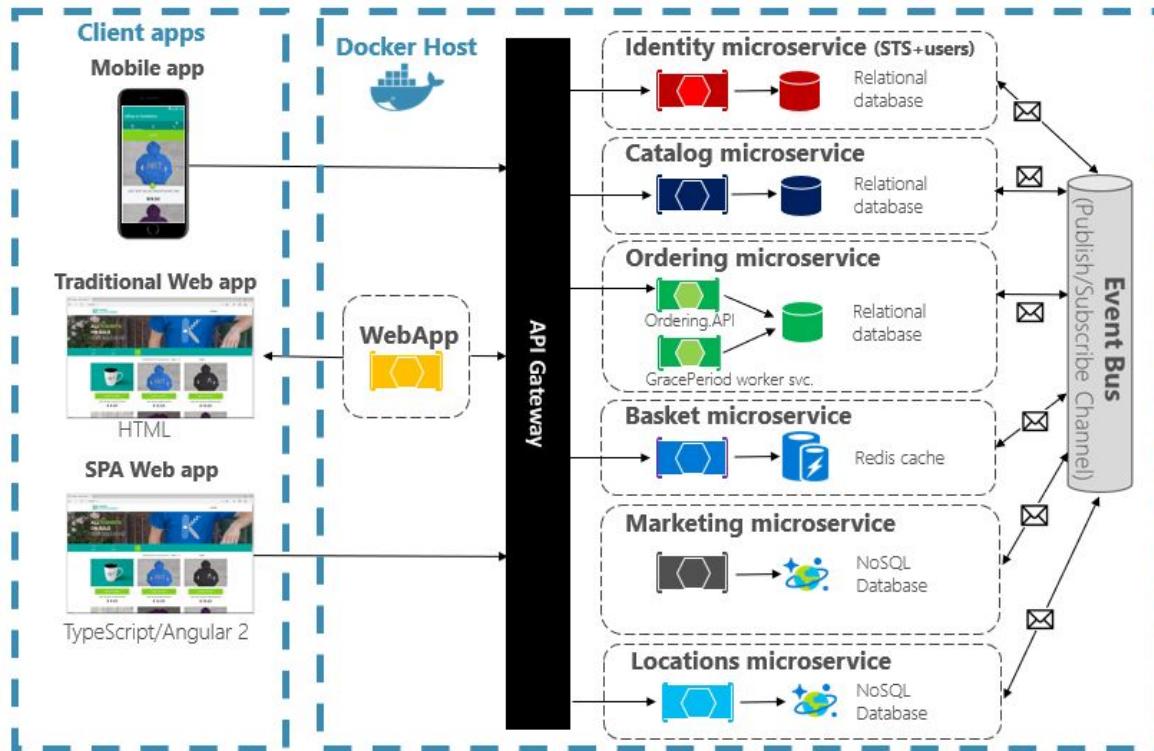
Cloud Native

Company	Experience
Netflix ↗	Has 600+ services in production. Deploys hundred times per day.
Uber ↗	Has 1,000+ services in production. Deploys several thousand times each week.
WeChat ↗	Has 3,000+ services in production. Deploys 1,000 times a day.

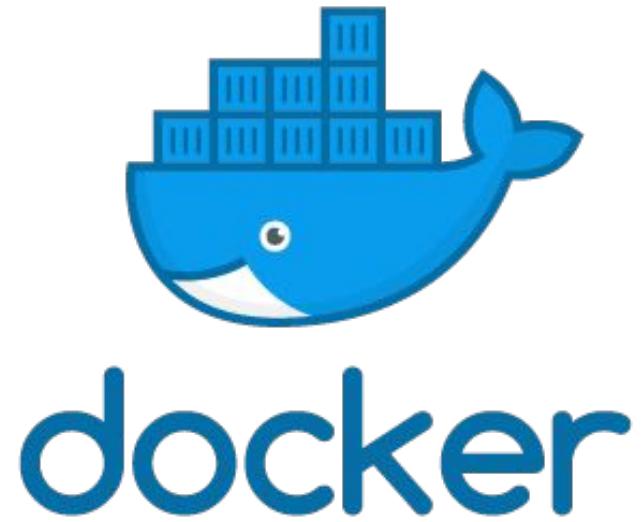
Cloud Native



eCommerce application adopting a cloud-native approach



2021 Suez Canal obstruction 23 – 29 March 2021



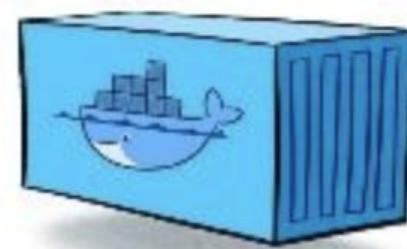
Dockerfile



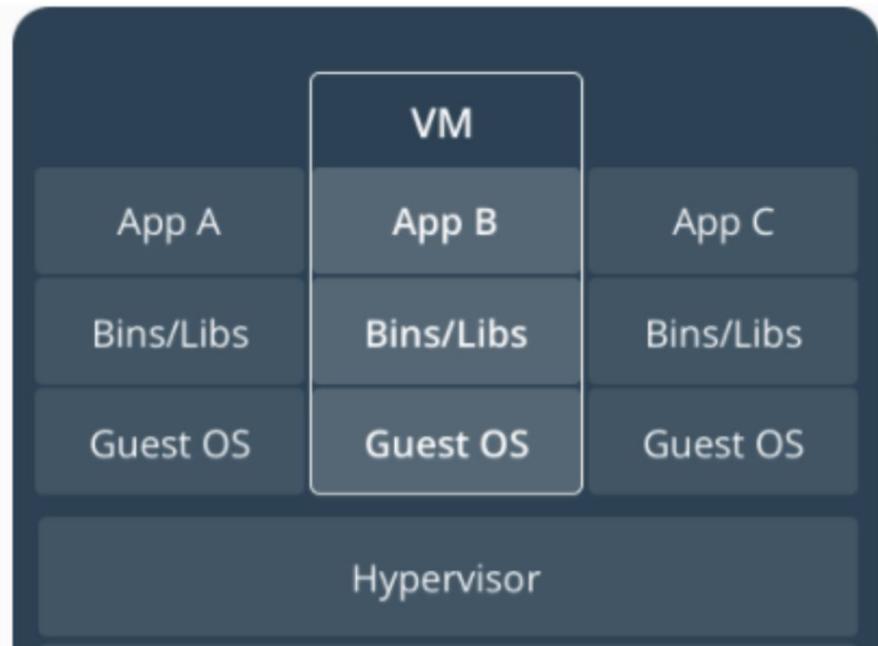
A placeholder for an image, showing the word "Image" in a light gray box.

Docker Image

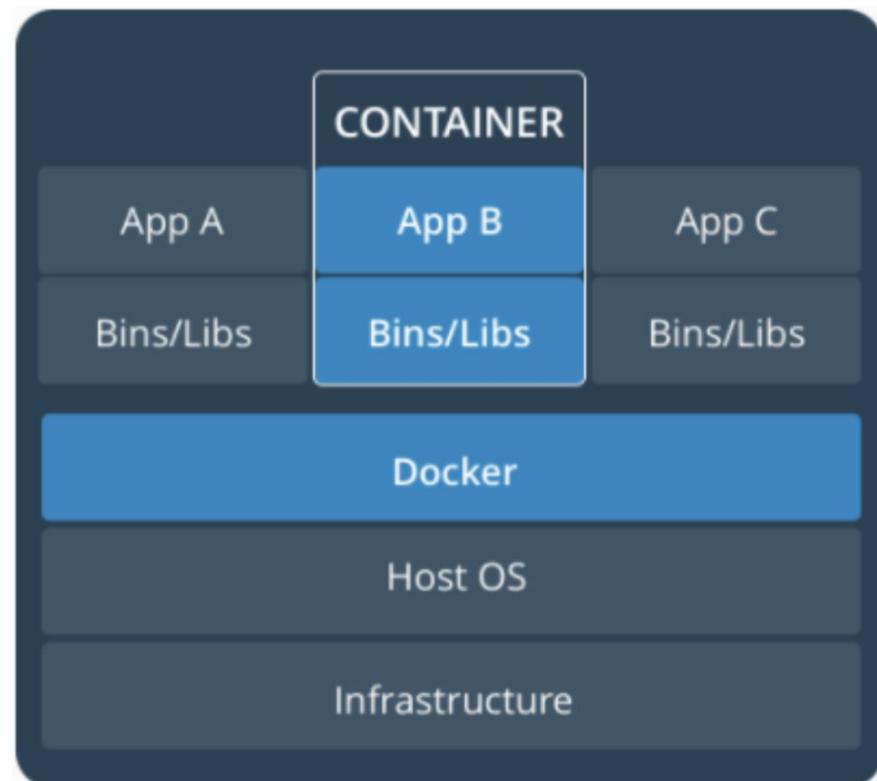
run



Docker Container



VIRTUAL MACHINES

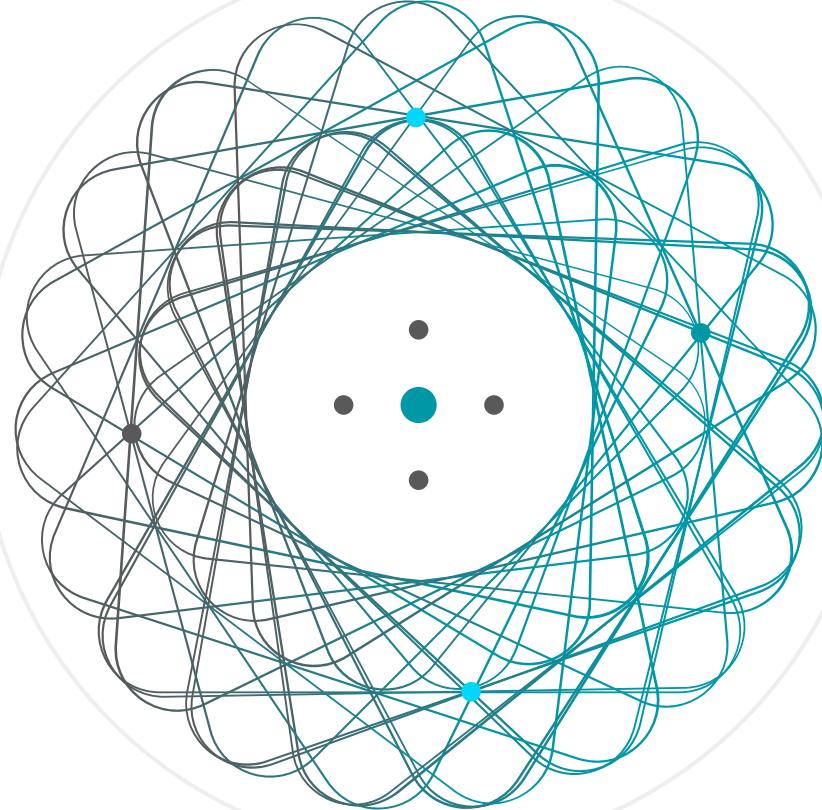


CONTAINERS



End of
It works on my
machine.

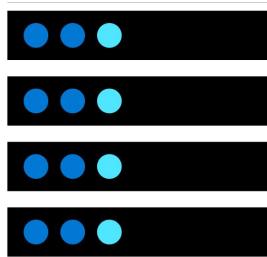
Introduction to Cloud Computing



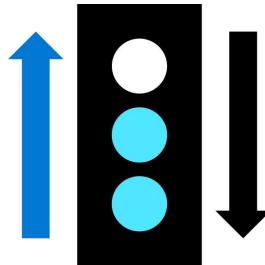


What is cloud computing?

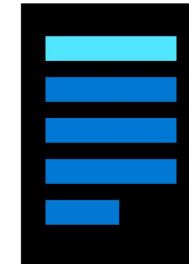
Cloud Computing is the delivery of computing services over the internet, enabling faster innovation, flexible resources, and economies of scale.



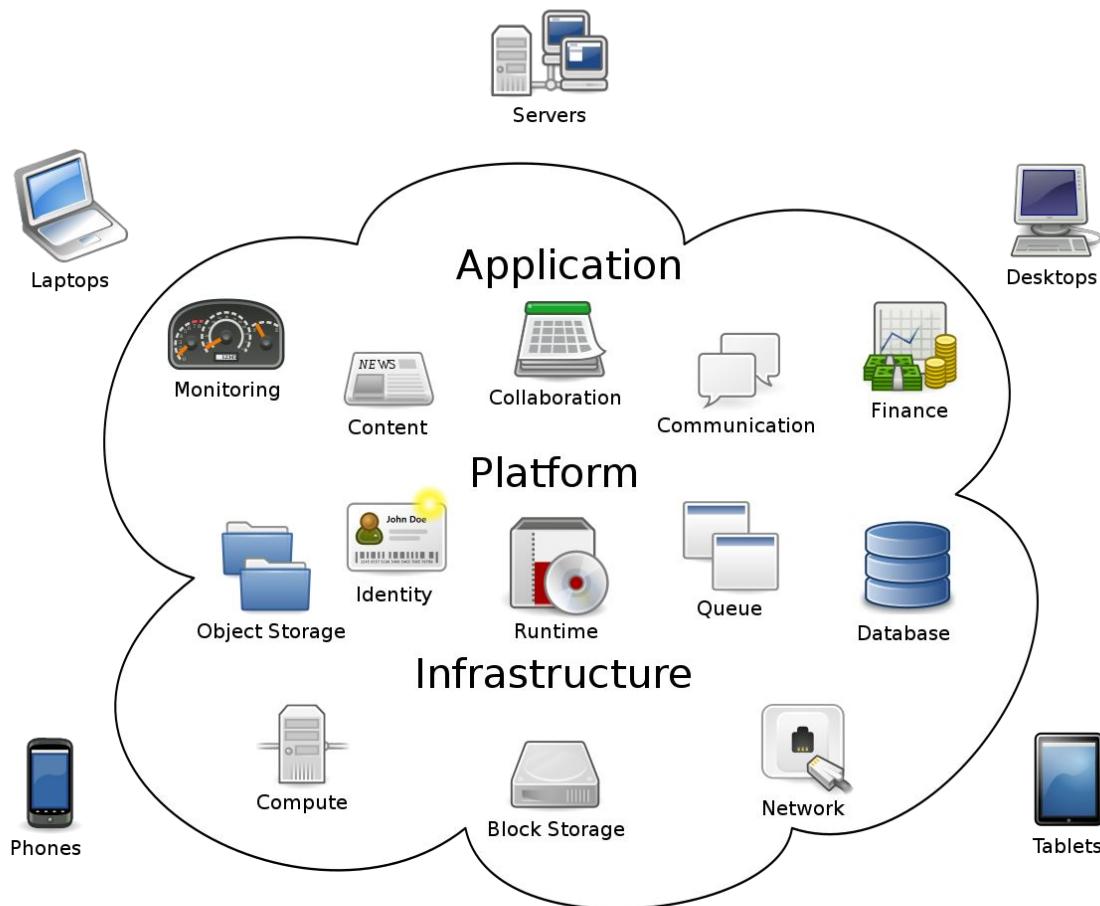
Compute

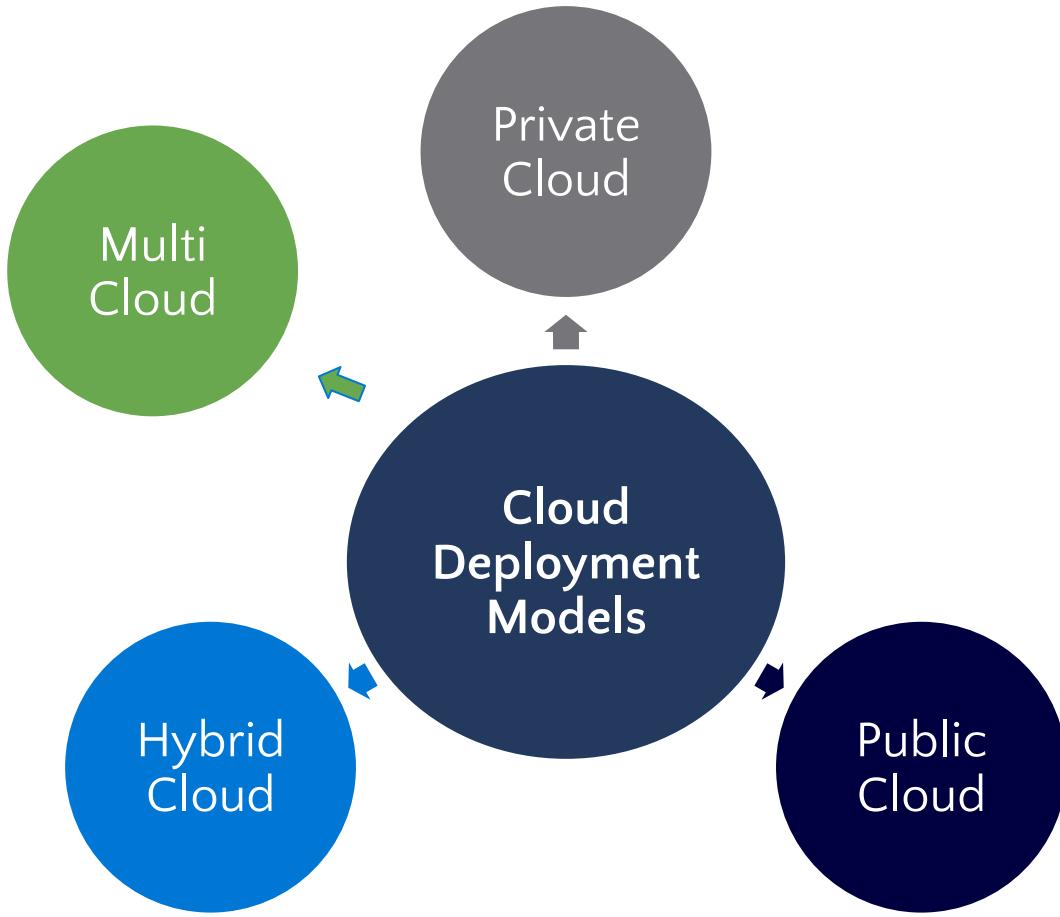


Networking



Storage





Cloud benefits





I can use only one laptop
to run an ecommerce
website.



Ooops! Not enough
memory.



Cloud Benefits

High availability

Scalability

Reliability

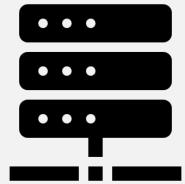
Predictability

Security

Governance

Manageability

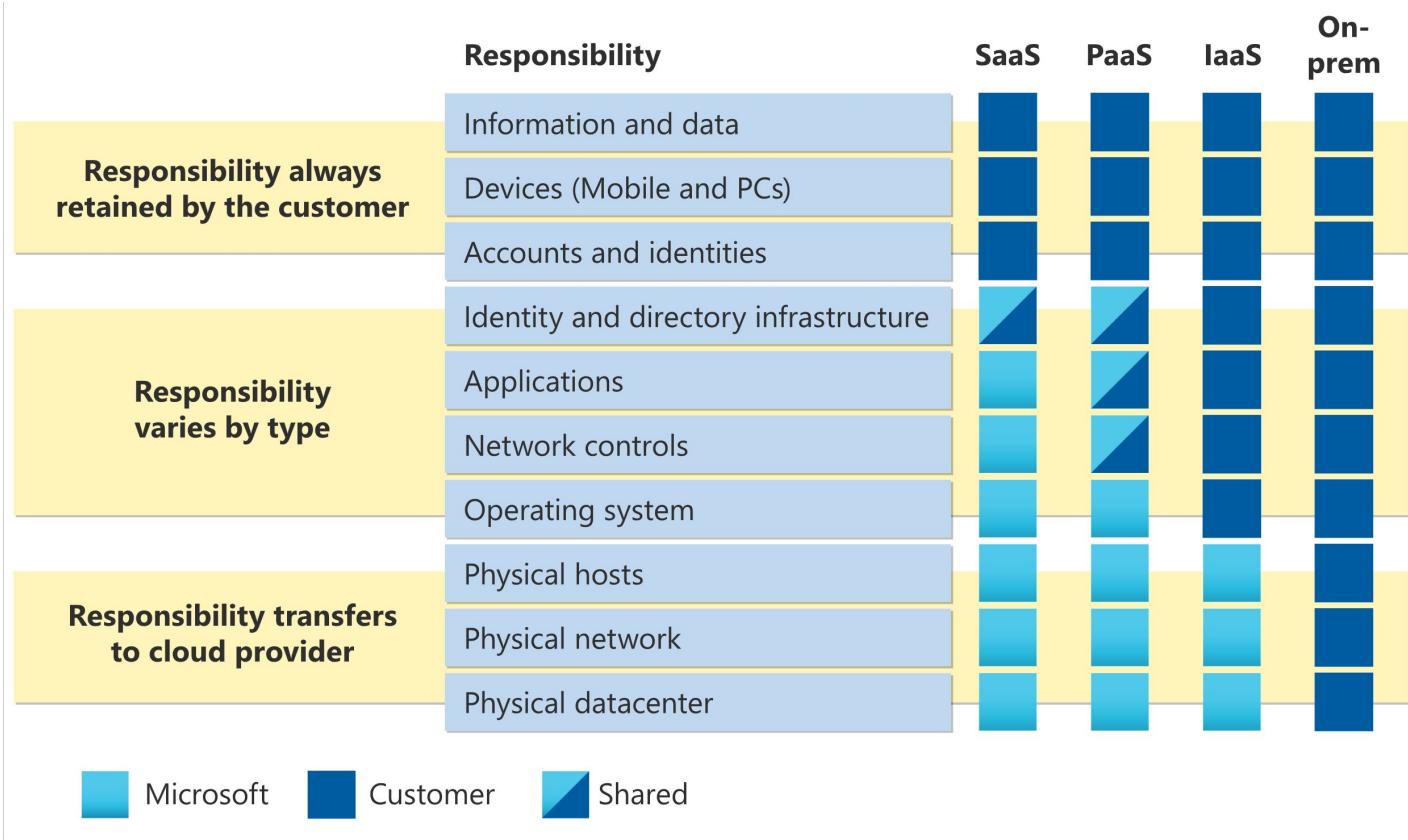
Cloud service types



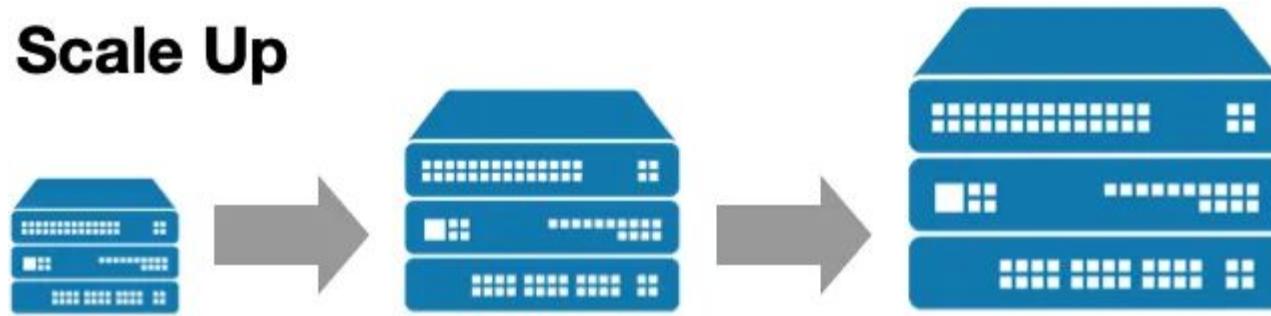
Who is responsible for cloud computing?



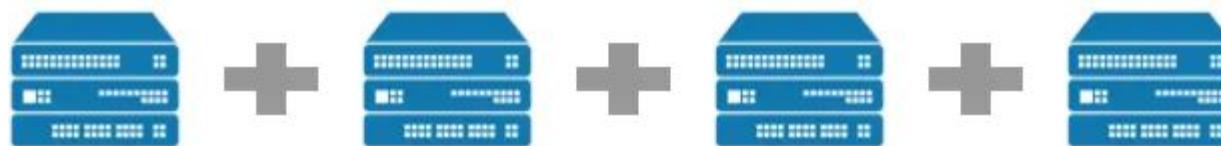
Shared responsibility model



Scale Up

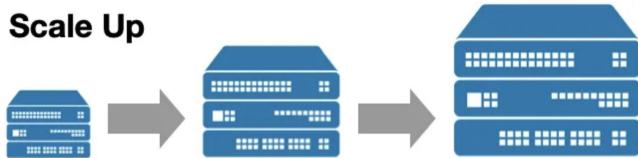


Scale Out



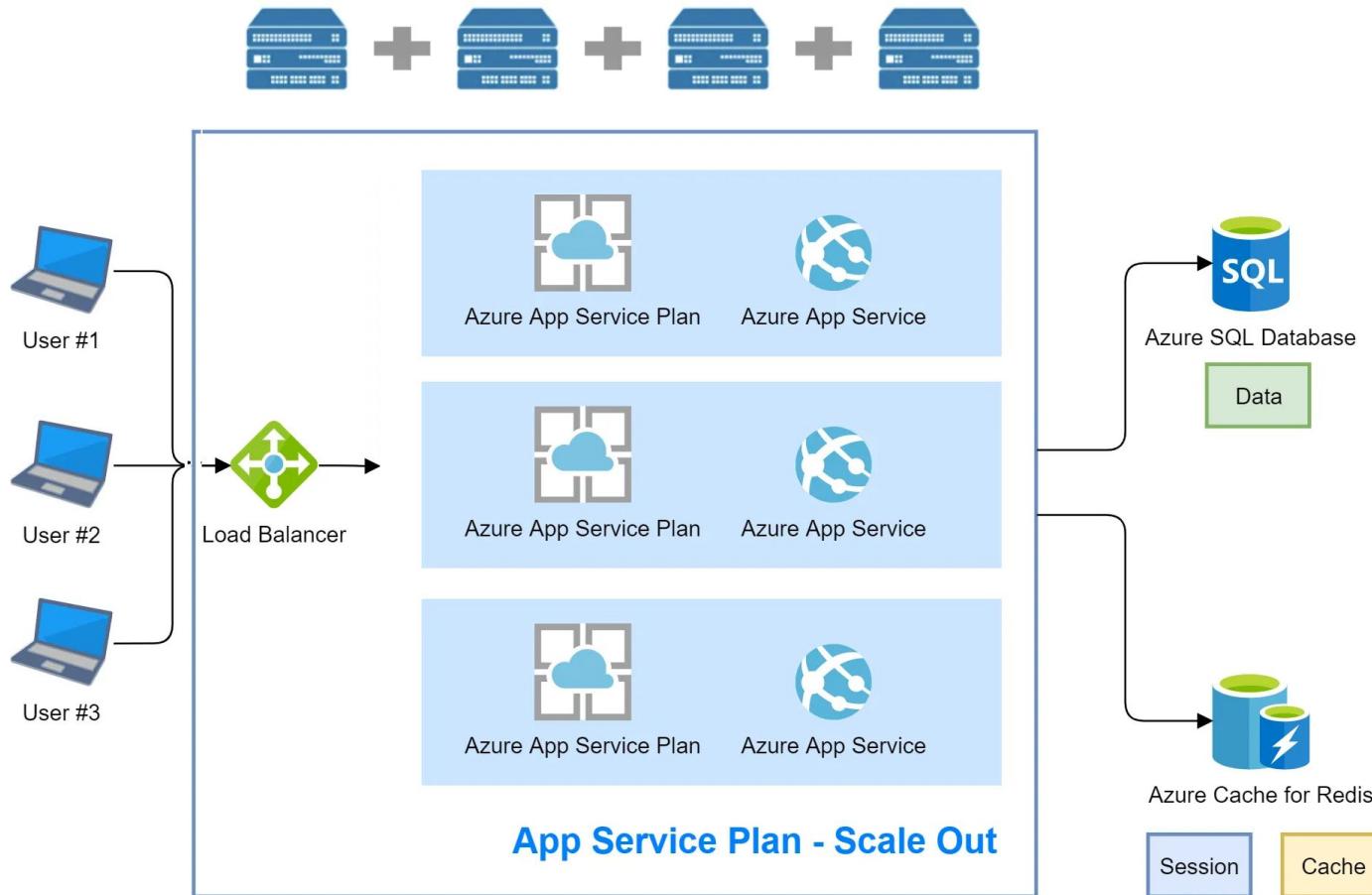
<https://microsegment.io/post/2019-09-15-scale-up-vs-scale-out/>

Scale Up

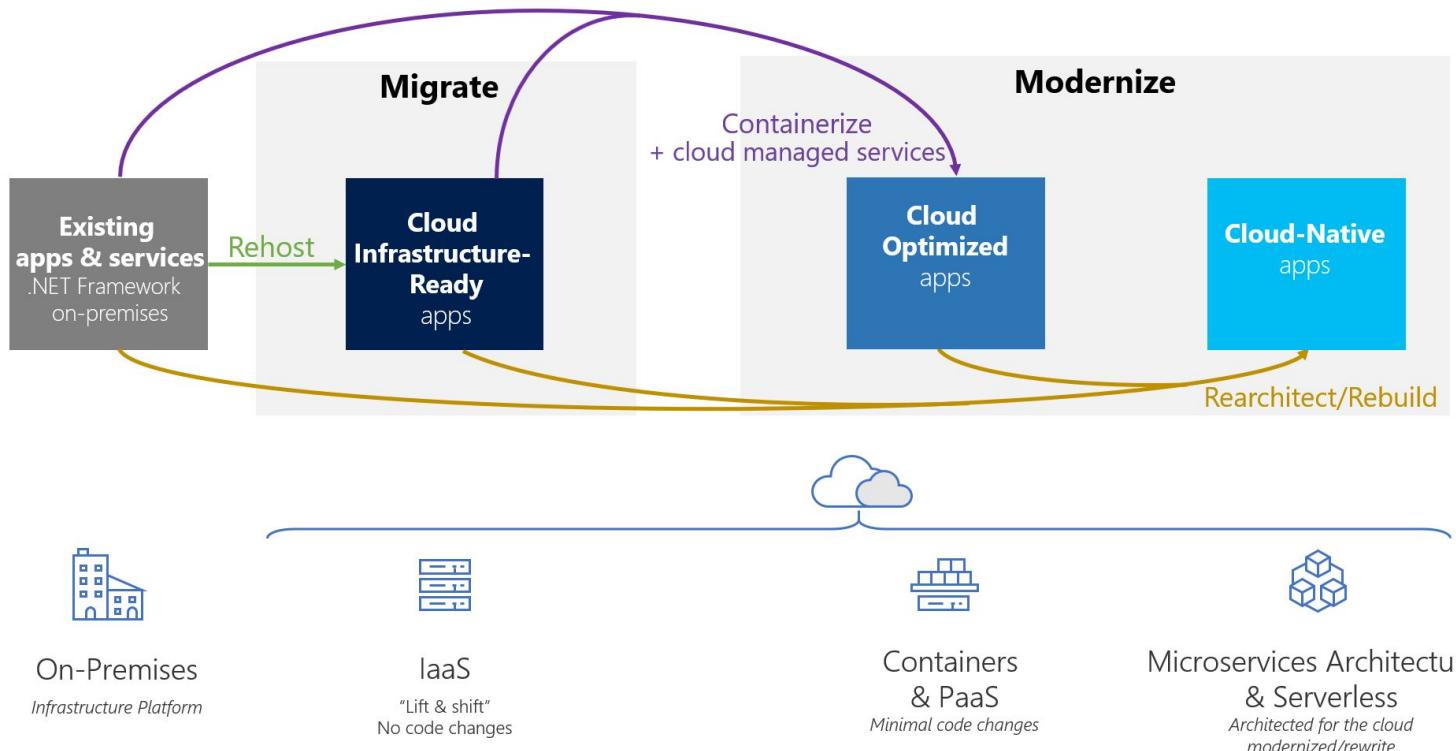


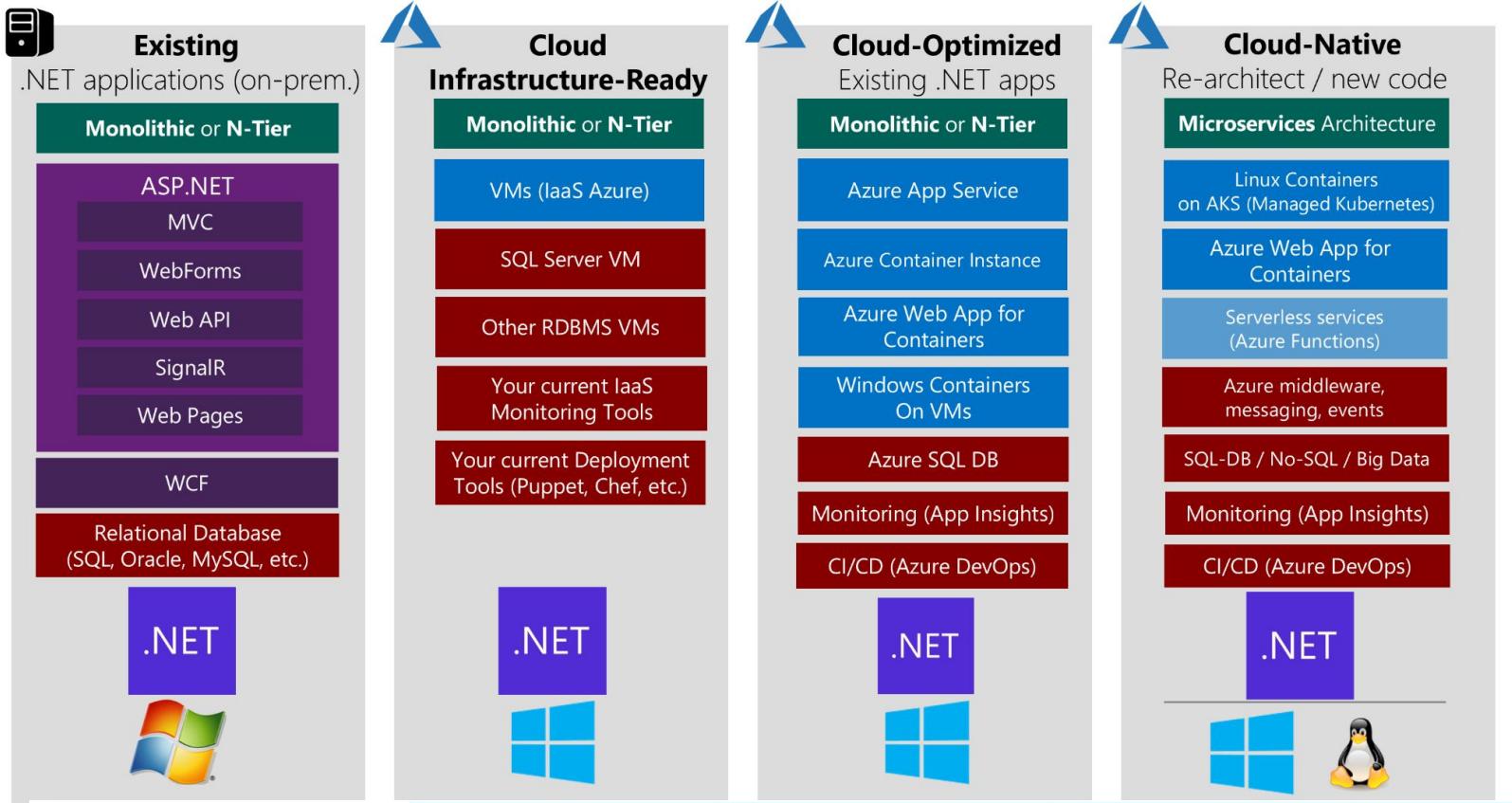
Name	ACU/vCPU	vCPU	Memory (GB)	Remote Storage (GB)	Scale (instance)	SLA	Cost per hour	Cost per month
▼ Dev/Test (For less demanding workloads)								
<input type="checkbox"/> Free F1	60 minutes/day...	N/A	1	1	N/A	N/A	Free	Free
<input type="checkbox"/> Shared D1	240 minutes/da...	N/A	1	1	N/A	N/A	0.013 USD	9.49 USD
<input type="checkbox"/> Basic B1	100	1	1.75	10	3	99.95%	0.075 USD	54.75 USD
<input type="checkbox"/> Basic B2	100	2	3.5	10	3	99.95%	0.15 USD	109.50 USD
<input type="checkbox"/> Basic B3	100	4	7	10	3	99.95%	0.30 USD	219.00 USD
▼ Production (For most production workloads)								
<input type="checkbox"/> Standard S1	100	1	1.75	50	10	99.95%	0.10 USD	73.00 USD
<input type="checkbox"/> Standard S2	100	2	3.5	50	10	99.95%	0.20 USD	146.00 USD
<input type="checkbox"/> Standard S3	100	4	7	50	10	99.95%	0.40 USD	292.00 USD
<input type="checkbox"/> Premium P1	100	1	1.75	250	20	99.95%	0.30 USD	219.00 USD
<input type="checkbox"/> Premium P2	100	2	3.5	250	20	99.95%	0.60 USD	438.00 USD
<input type="checkbox"/> Premium P3	100	4	7	250	20	99.95%	1.20 USD	876.00 USD
<input type="checkbox"/> Premium v2 P1V2	210	1	3.5	250	30	99.95%	0.20 USD	146.00 USD
<input type="checkbox"/> Premium v2 P2V2	210	2	7	250	30	99.95%	0.40 USD	292.00 USD
<input checked="" type="checkbox"/> Premium v2 P3V2	210	4	14	250	30	99.95%	0.80 USD	584.00 USD

Scale Out



The Journey to the Cloud





Base Cloud Environment and cross-cutting concerns: Network, Hybrid-cloud, Identity/Auth, Cost control and Operations model

Migrate / Rehost

Minimal code changes

Modernize

Architected for the cloud, needs new code

Architecting Cloud-Native .NET Apps for Azure



Robert Vettor
Steve "ardalis" Smith

Version 1.0

Modernize existing .NET applications with Azure cloud and Windows Containers



Cesar de la Torre
Microsoft Corp.



Microsoft Cloud Adoption Framework for Azure

Proven guidance and best practices that help you confidently adopt the cloud and achieve business outcomes.



[Microsoft Learn](#)



naiwaen@DebuggingSoft

Serverless Demo

10:08



94

เทศบาล คลาวน์ เนทีฟไทด์บ้าน



Demo!



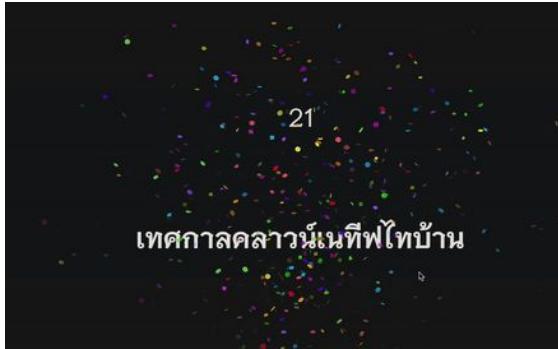
<https://bit.ly/thaiban-serverless>



Demo!

<https://github.com/mildronize/cloud-native-thain-serverless>

Architecture



Confetti Stage



Azure SignalR Service



Controller



Azure Functions

Serverless Services



Azure Static Web Apps

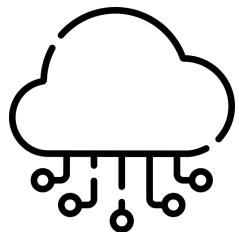


Azure Functions

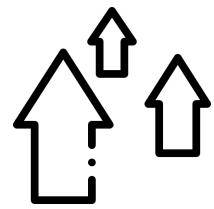


Azure SignalR Service

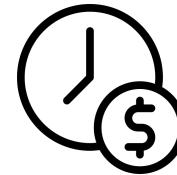
What's Serverless



Abstract of servers



Event Driven /
Instant Scale

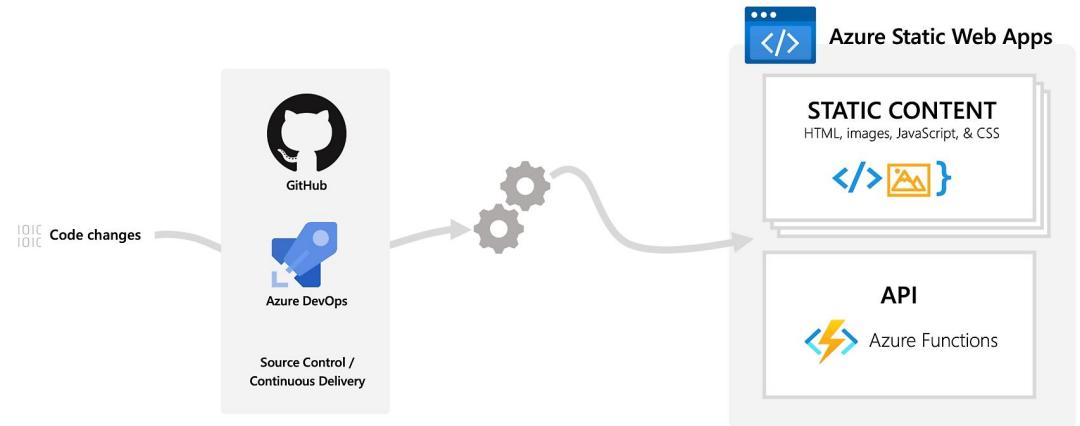


Pay as use



Azure Static Web Apps

- Deploy static site e.g.
 - React, Vue, Angular
- Global hosting
- API Functions
- Staging environments





Azure Functions

Execute your code in response to any event



```
// @azure/functions@3.5.x
import { Context, HttpRequest } from '@azure/functions';

export default function myFunction(context: Context, req: HttpRequest) {

    context.log('JavaScript HTTP trigger function processed a request.');

    // Perform work

    return {
        body: 'OK',
    };
}
```

Azure Functions Key Concepts

A. Function App - Unit of development and deployment. Can have many functions

B. Triggers - Event source that starts the function. One per function

C. Bindings

Input - Data that is pulled in at the start of an execution. Can have multiple

Output - Data that is pushed out after an execution. Can have multiple

Popular Triggers and Bindings

HTTP

Storage Queues

Cosmos DB

Event Hubs

Blob Storage

Service Bus Queues/Topics

Event Grid

IoT Hub

And more...



Azure SignalR Service

- Production ready for real-time communications
- Easy to use SignalR server/client library
- Support websocket, fallback to traditional method when client doesn't support
- Great Serverless mode with Azure Functions

Serverless Conclusion

- Only Pay as (**actual**) use
- No need manage infra
- Event Driven
- Instant Scale

Serverless Cost

Azure Static Web Apps

	Free (For hobbies/personal projects)	Standard (For general purpose production app)
Price	Free*	\$9/per app/month**
Included Bandwidth	100 GB per subscription	100 GB per subscription
Bandwidth Overage	N/A	\$0.20 per GB per subscription
Custom Domains	2 per app	5 per app
SSL Certificates	Free	Free

Azure Functions

Meter	Free Grant (Per Month)	Pay as you go
Execution Time*	400,000 GB-s	\$0.000016/GB-s
Total Executions*	1 million executions	\$0.20 per million executions

**Consumption Plan

Azure Functions

Azure Functions

Region:

Southeast Asia

Tier:

Consumption

1 Million Execution / Month

- (i) The first 400,000 GB/s of execution and 1,000,000 executions are free.

Executions

Memory size:

128

x

500

x

1000000

= \$0.00

Execution time (in
milliseconds)

Executions per month

Requests

1,000,000

= \$0.00

Execution count

**Consumption Plan

Azure Functions

10 Million Execution / Month

Azure Functions

Region:

Southeast Asia

Tier:

Consumption

- ⓘ The first 400,000 GB/s of execution and 1,000,000 executions are free.

Executions

Memory size:

128

x

500

x

10000000

= \$3.60

Execution time (in milliseconds)

Executions per month

Requests

10,000,000

= \$1.80

Execution count

**Consumption Plan

Upfront cost

\$0.00

Monthly cost

\$5.40

Azure SignalR Service

	Free	Standard	Premium
Concurrent Connections per Unit	20	1,000	1,000
Messages / Unit / Day	20,000	unlimited (free for the first 1,000,000 messages)	unlimited (free for the first 1,000,000 messages)
Price / Unit / Day	Free	\$1.61	\$2 (instance scale <= 100 units)
SLA	N/A	99.9%	99.95%

Cost Summary

- Cheaper than Virtual Machine or Azure App Service
- Cost count when the code is run, not standby time
- Non-Serverless cost is static cost per month (Bill stop when stop the servers)
 - Including standby time

Amazon Prime Case Study

Scaling up the Prime Video audio/video monitoring service and reducing costs by 90%

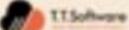
The move from a distributed microservices architecture to a monolith application helped achieve higher scale, resilience, and reduce costs.

[https://www.primevideotech.com/video-streaming/scaling-up-the-prime-video-audio-video-monitoring-service-and-reducing-costs-b
y-90](https://www.primevideotech.com/video-streaming/scaling-up-the-prime-video-audio-video-monitoring-service-and-reducing-costs-by-90)

Discussion

- Not easy to predict with Serverless Computing
- Choose the right pricing model for your use cases.
- **Next Action**
 - Cost Monitoring & Alert
 - Cost Optimization

DEV



ทุกการเติบโต
ย่อมป่วยหลังเสมอ

DEV



ตัวตึง
เจพะค้อป้าไก่

DEV



เหมือนอยู่กับพาก
เจอบึ้ด ก็อย่าก้อ

Thank you!

