# .NET Frameworks Benchmarking
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# Who am I?

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# Agenda

- What is Benchmark? Why Benchmark?

- Serverless Benchmark Setup

- Function Sizes

- Cold Start Results

- Performance Results

- Cost Results

- Q&A

# What is Benchmark ?

**Benchmarking** is the practice of comparing

business processes and performance metrics

to industry bests and best practices from other

companies.*



image from https://www.freepik.com/vectors/abstract

# Why benchmark?

We need to understand and see how our system, programing language or implementations are behaving under certain circumstances.

# What will we benchmark?
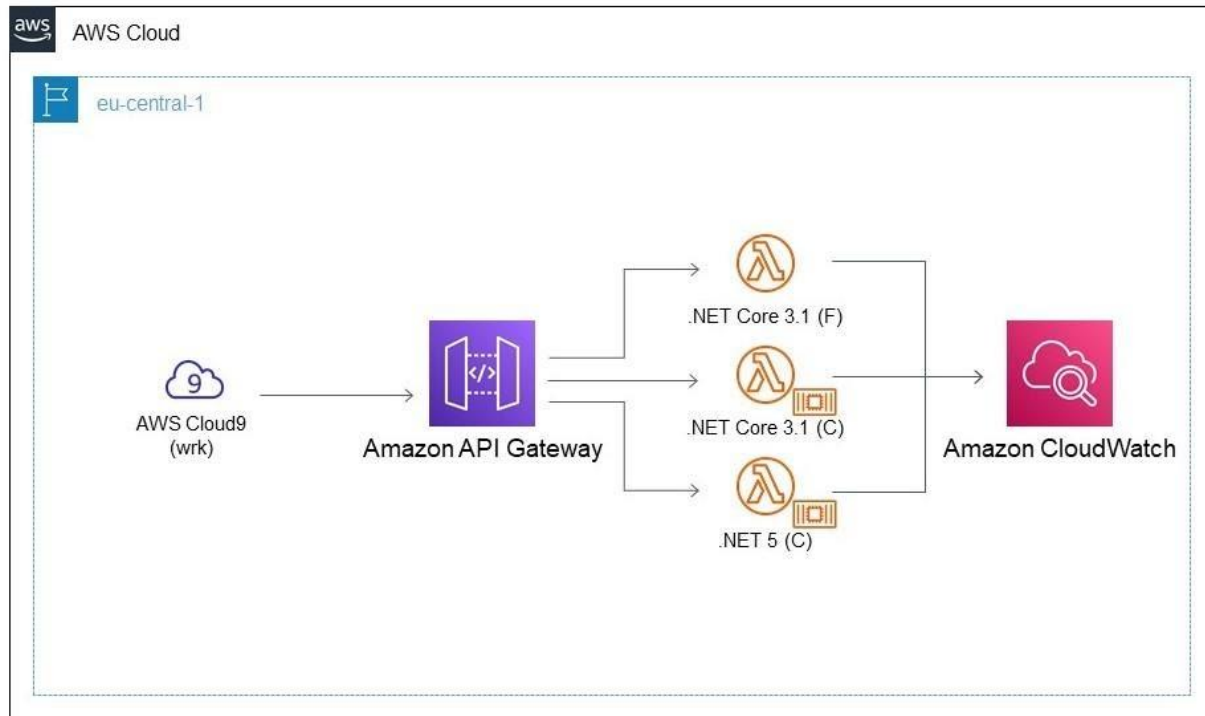
- .NET versions.

- Environments.

- Implementations



image from  https://bridgecrew.io/blog/infrastructure-as-code-security-101/

# Serverless Benchmark

# Setup

# Functions Sizes

Functions Sizes

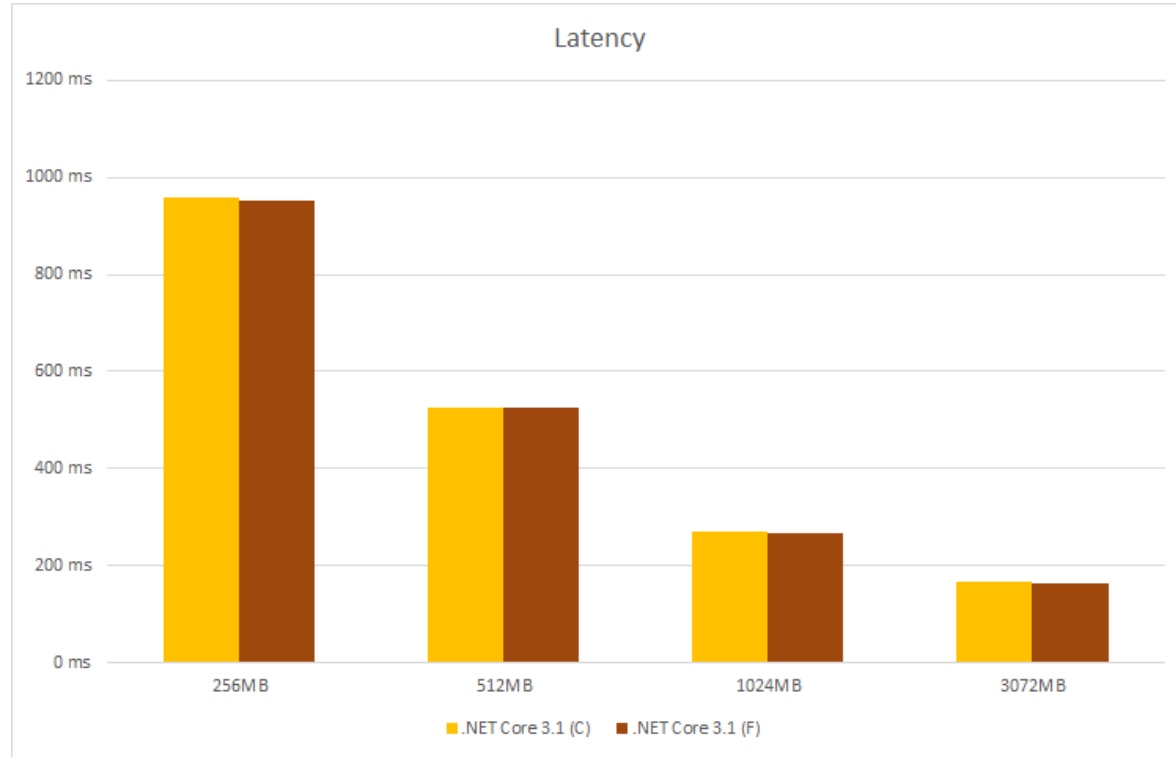| | Framework | Container Size | Function Size |
|---|---|---|---|
| 1 | | | |
| 2 | .NET Core 2.1 | 360.63 MB | 231.7 kB |
| 3 | .NET Core 3.1 | 205.26 MB | 41.8 kB |
| 4 | .NET 5 | 144.80 MB | - |

# What is Cold Start?

From when an event happens to start up a function until that function completes responding to the event. So more precisely, a cold start is an **increase in latency** for Functions which haven't been called recently.*
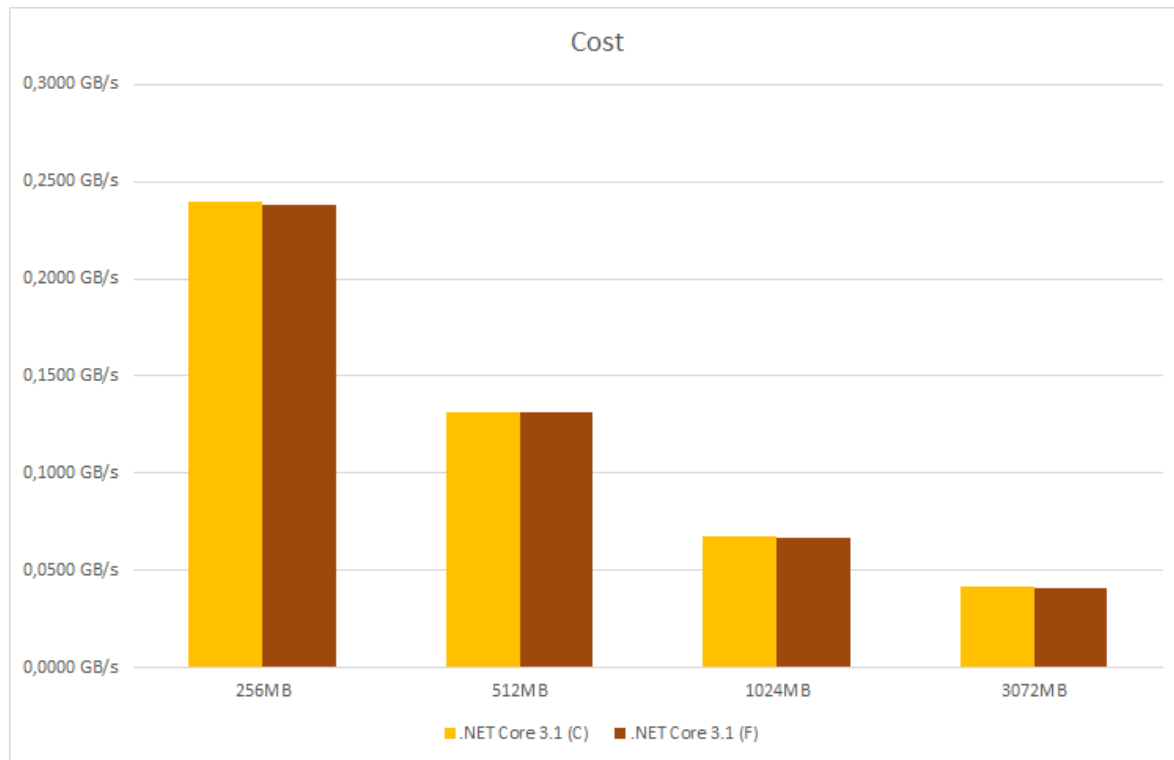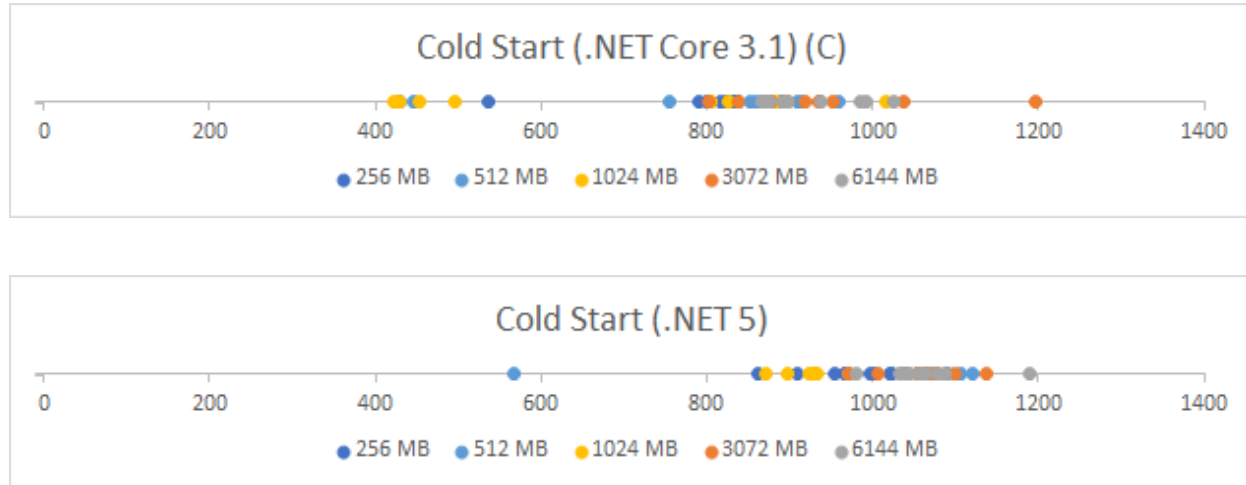
# Cold Start (Zip vs Container)

## Cold Start (.NET Core 3.1) (F)

| 0 | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 |

● 256 MB   ● 6144 MB   ● 512 MB   ● 1024 MB   ● 3072 MB

## Cold Start (.NET Core 3.1) (C)

| 0 | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 |

● 256 MB   ● 512 MB   ● 1024 MB   ● 3072 MB   ● 6144 MB
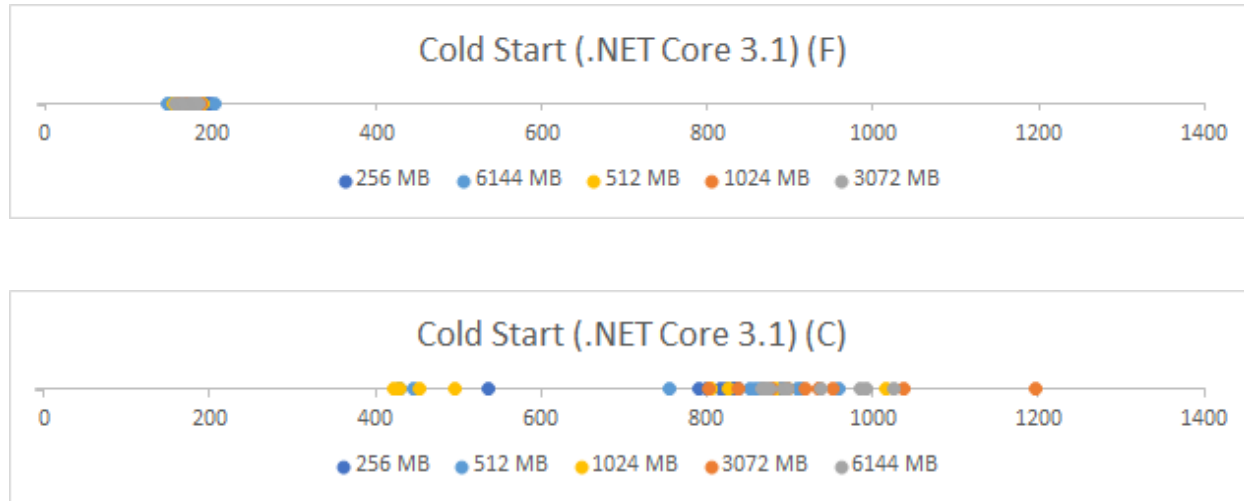
# Performance (Zip vs Container)

# Cost (Zip vs Container)

# Cold Start (.NET Core 3.1 vs .NET 5)



Cold Start (.NET Core 3.1) (C)

● 256 MB  ● 512 MB  ● 1024 MB  ● 3072 MB  ● 6144 MB

Cold Start (.NET 5)

● 256 MB  ● 512 MB  ● 1024 MB  ● 3072 MB  ● 6144 MB

# Performance (.NET Core 3.1 vs .NET 5)
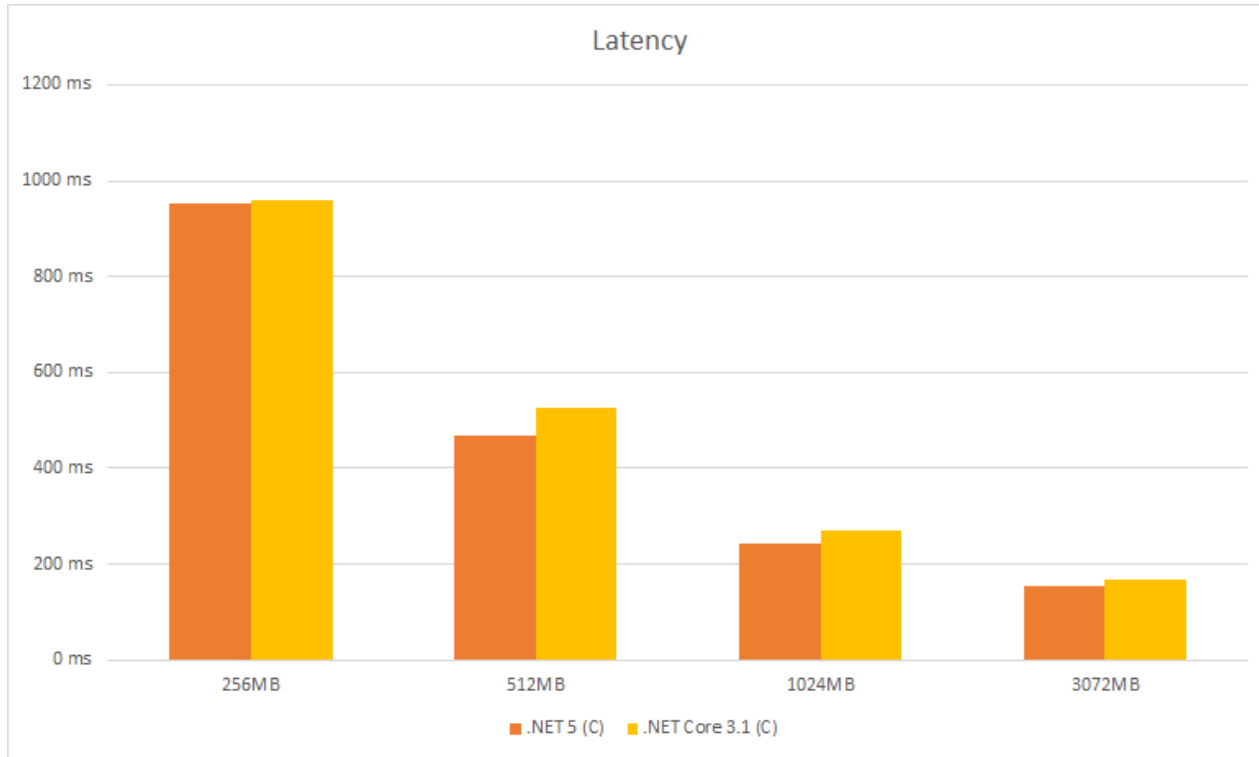
# Cost (.NET Core 3.1 vs .NET 5)
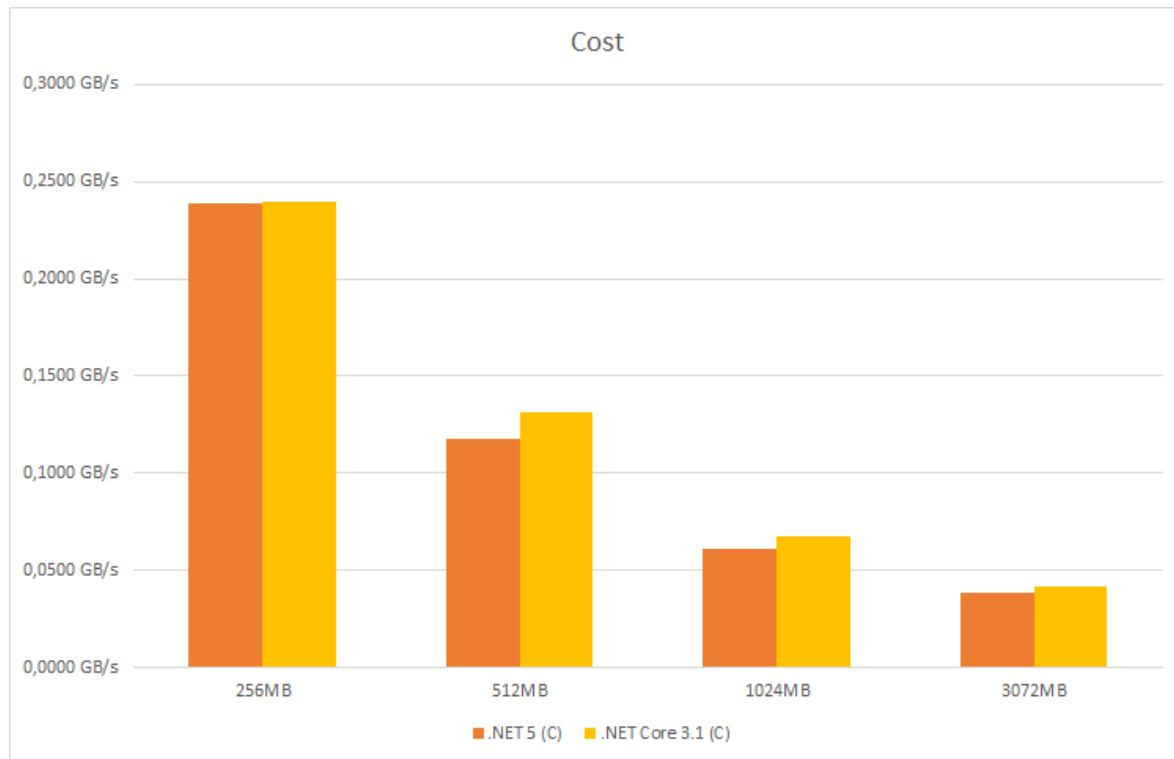
# Demo

# Q & A

## Thank you for listening.

RESOURCES MENTIONED

IN THIS SESSION WILL BE

AVAILABLE ON MY TWITTER

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**WE'RE HIRING!**

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# Sources

- https://en.wikipedia.org/wiki/Benchmarking
- https://gist.github.com/irensaltali/4f6b8b3ff9d788e015371d6798570ae1
- https://azure.microsoft.com/ru-ru/blog/understanding-serverless-cold-start/
- https://github.com/wg/wrk
- https://github.com/giltene/wrk2