µBench - A factory of benchmarking microservices applications

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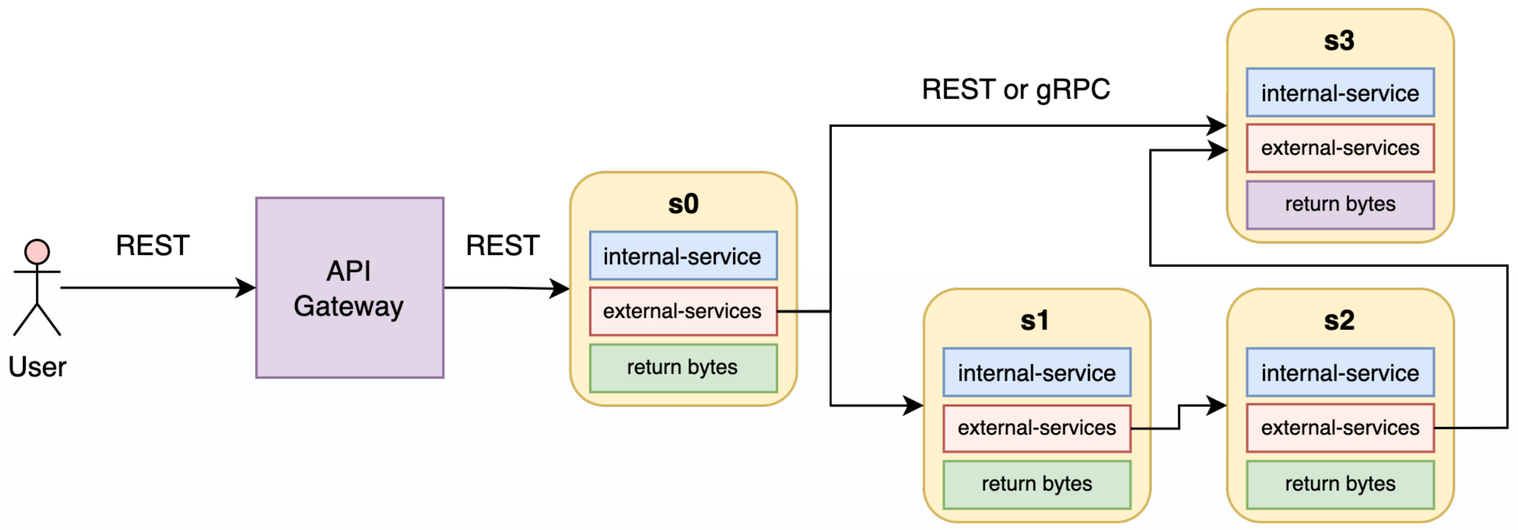


µBench generated microservice application

What is it ?

µBench creates ***dummy*** **microservice applications** that can be customized by the user and run on Kubernetes.
µBench is a tool for benchmarking cloud/edge computing platforms that run microservice applications.

Who cares ?

Researchers and cloud platform developers who lack real microservice applications to benchmark their findings.
Can also be used for **educational purposes** to show advantages and problems of microservice applications.

Which level of customization ?

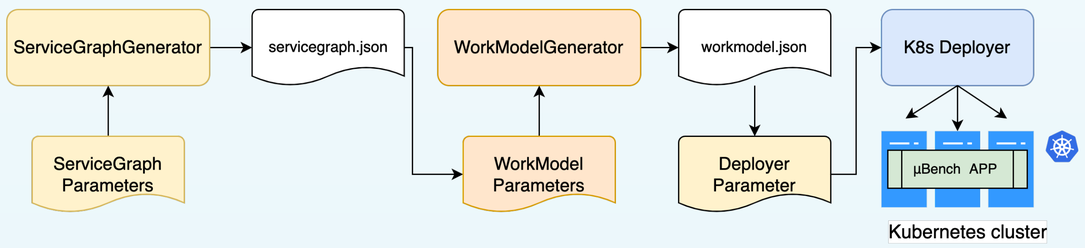
- **dependency graph** among microservices (service graph)
- **stress functions** (e.g. for CPU, memory, I/O, network) run by microservices
- Kubernetes **CPU and Memory request, scheduler,** etc.

What I need ?

Written in **Python**. You need a **Kubernetes** cluster with **kubectl** access from the machine running µBench. With **Microsoft Visual Studio Code**, you have some Run and Debug actions already there.

How to create a µBench App ?

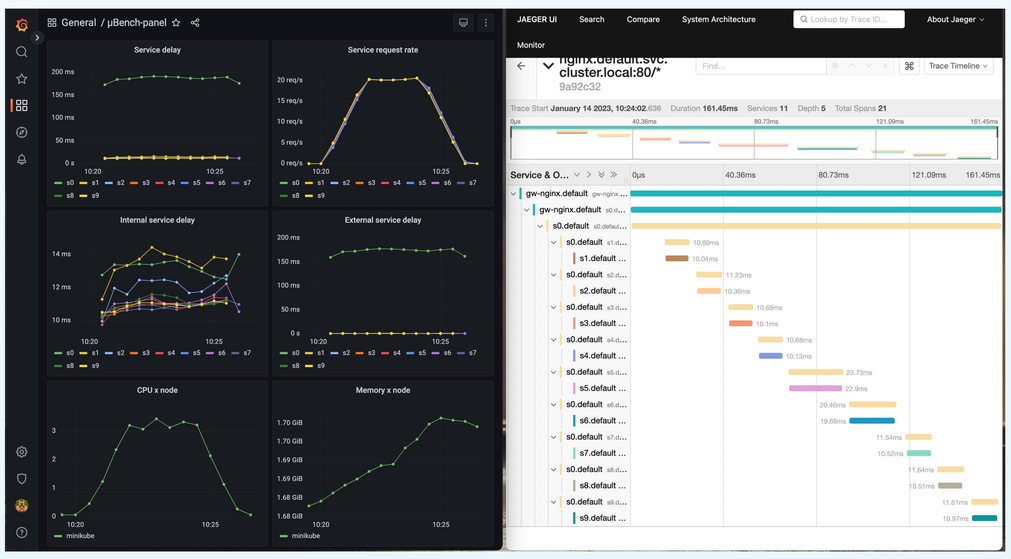
Manually, by writing a **workmodel.json** file that describes the workload of each microservice and then running the **K8s Deployer** tool. For large applications better to use the **µBench toolchain** that creates **random apps** with configurable statistical properties.



µBench toolchain

What can I observe ?

µBench is thoroughly integrated with **Prometheus and Istio service mesh**. You can use **Grafana** for real time metric plots, **Jaeger** for traces and **Kiali** to observe the service graph.



Some research areas

Benchmark for :
- Resource **schedulers** for cloud applications
- Placement policies for **cloud/edge cloud continuum** application
- **Load balancing** policies for service mesh
- **ML models** for digital twin of microservice apps

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https://github.com/mSvcBench/muBench