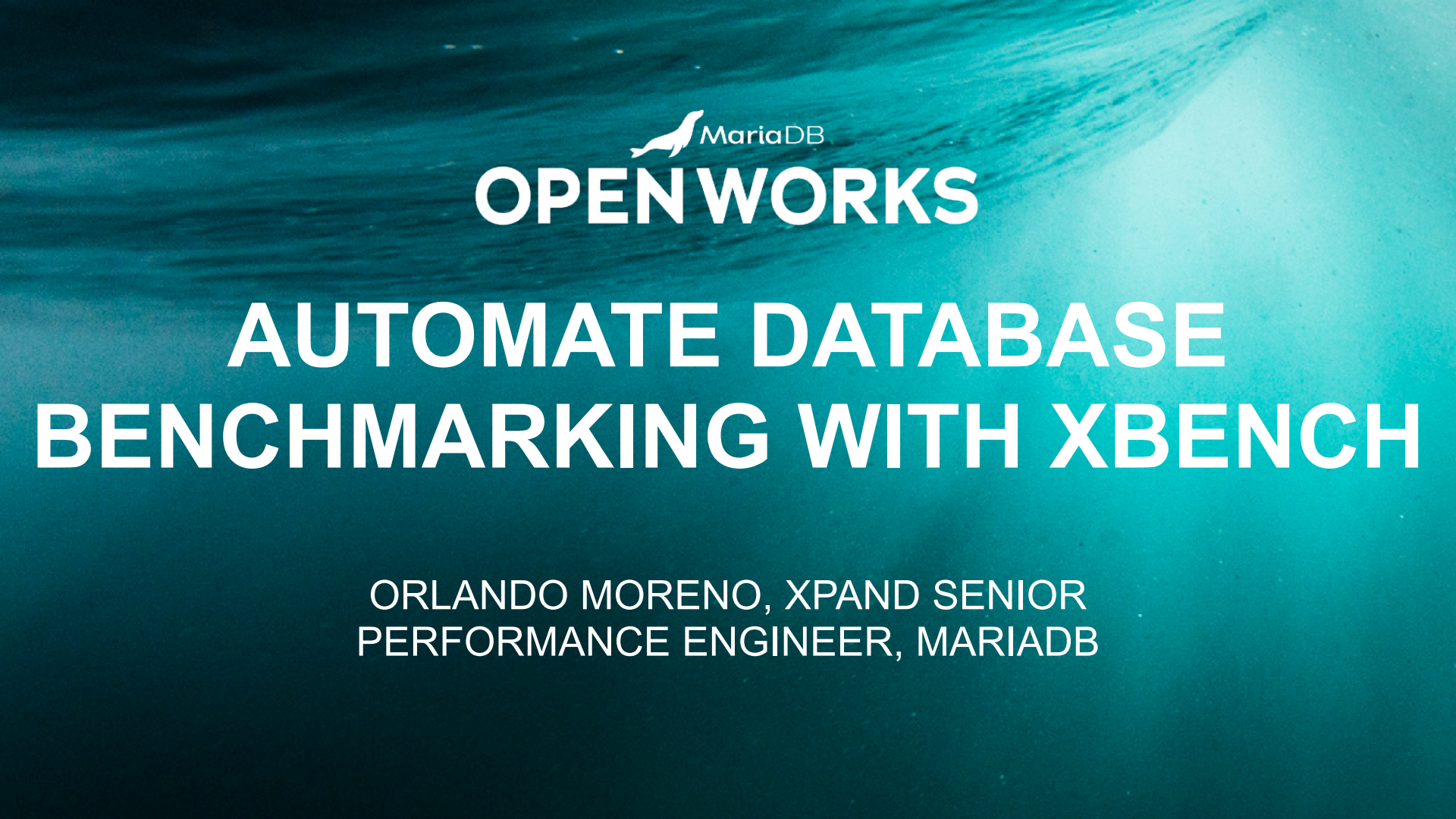

MariaDB
OPEN WORKS
BE UNSTOPPABLE



AUTOMATE DATABASE BENCHMARKING WITH XBENCH

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AGENDA

- Background
- Functionality
- Workflow
- Components
- Demo
- Capabilities
- Real-world Usage
- Closing

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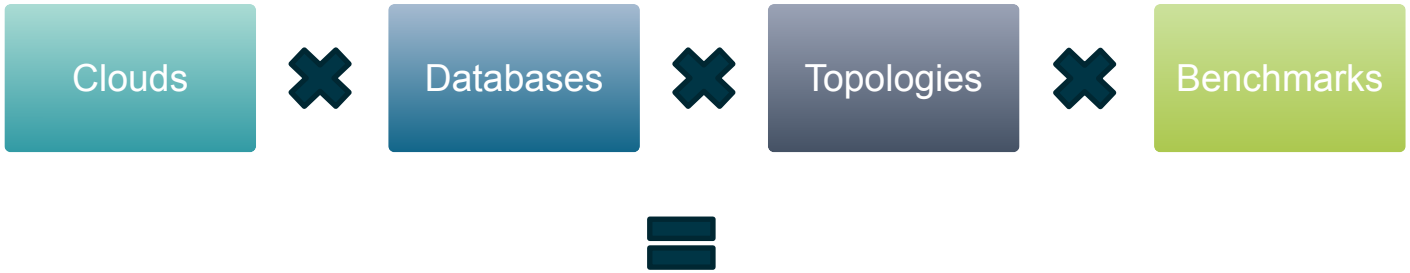
BACKGROUND

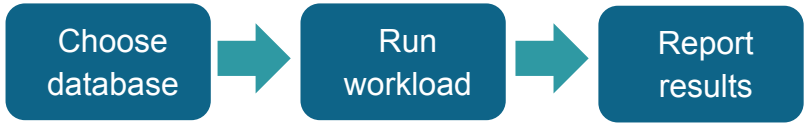
- Performance benchmarking across various database products is a very time-consuming task whose complexity exponentially grows as the number of parameters increases



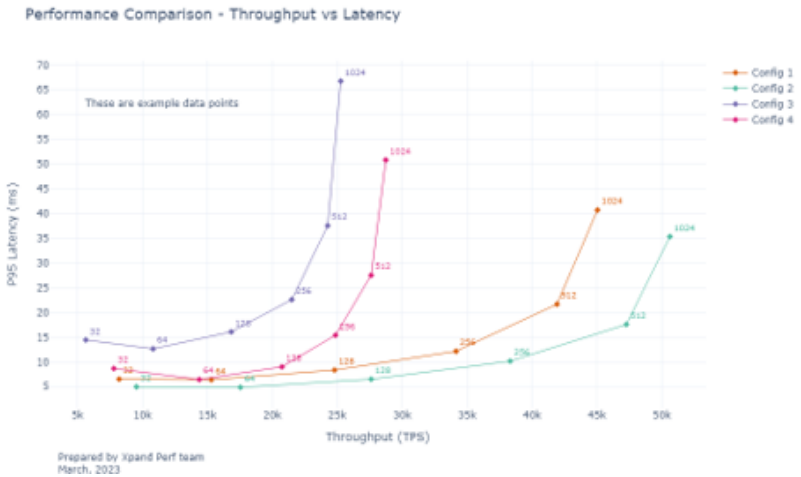
Too many to manually execute!

INTRODUCING XBENCH

A multi-DBMS, multi-cloud command-line tool which automates the complete end-to-end workflow of benchmarking a database product in the cloud.

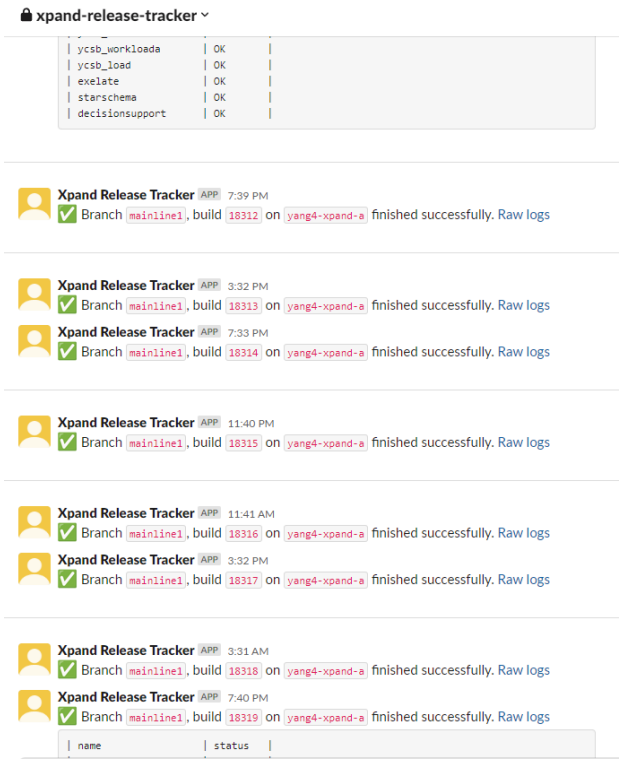



```
for db in {mariadb, xpand, postgres}
  for cloud in {aws, gcp}
    run_workload()
report_results()
```



Application

- Quick turnaround time is highly desirable in multiple scenarios
  - Release testing
  - Customer performance debug
  - Feature testing
  - Competitive analysis



Functionality

Written in Python 3, no Terraform or additional tooling needed

Workflow

- Provision
- Run workload
- Deprovision
- Report

Cluster Management

- SSH
- List
- Send/Receive files
- Start/Stop cluster

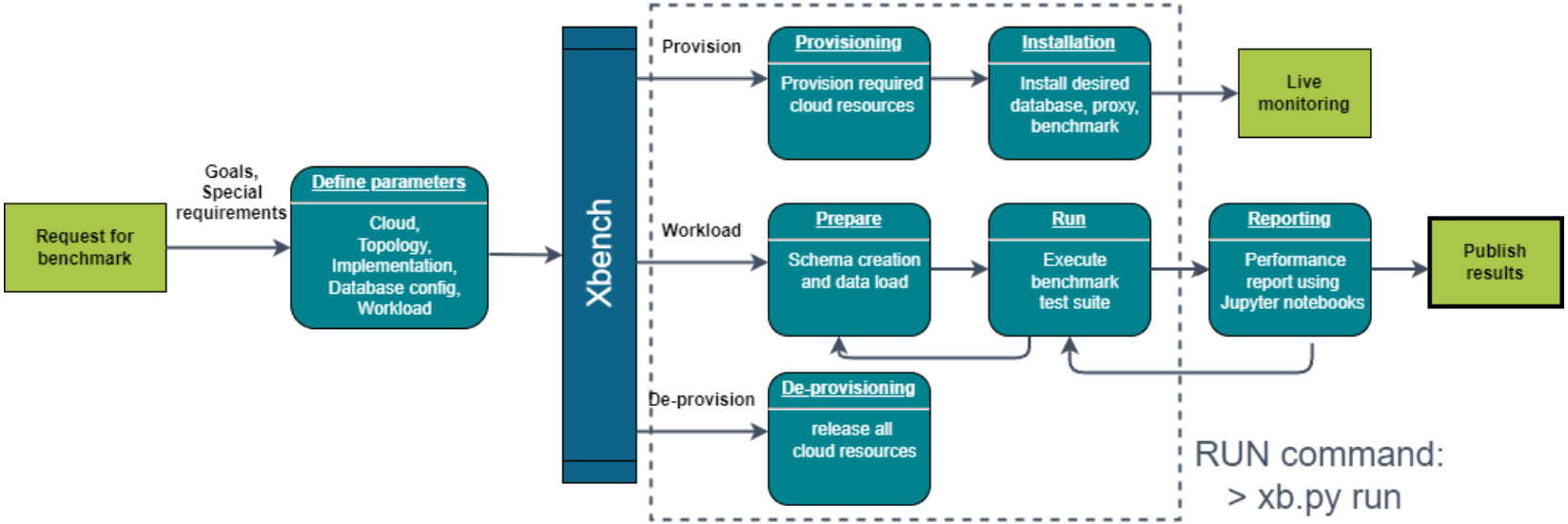
Security

- List allowed IPs
- Add/Delete IP

Metrics

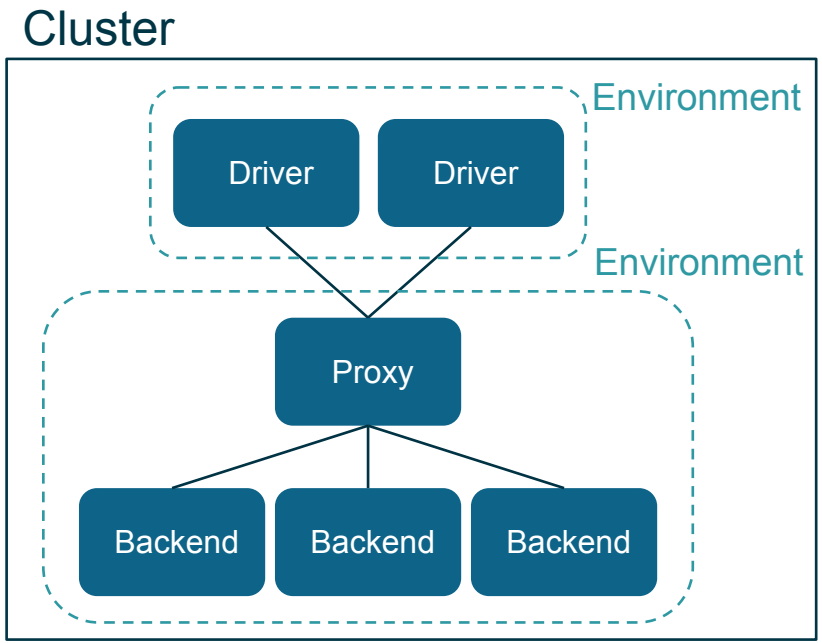
- Provision
- Exporters
- Snapshots

WORKFLOW



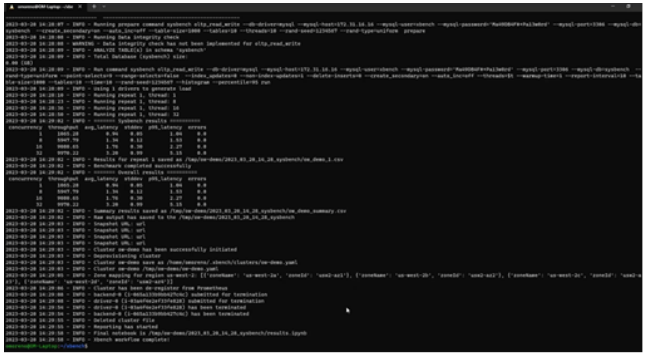
COMPONENTS

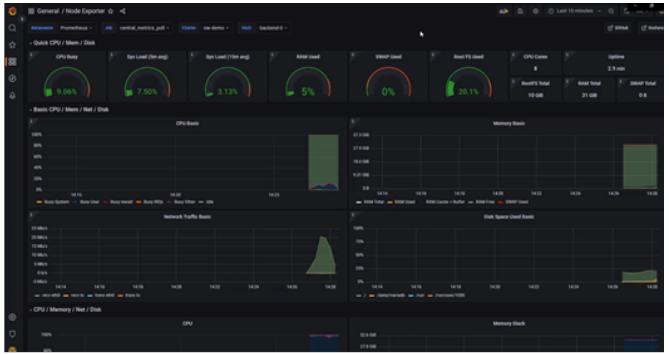
- Topology – logical view of how driver, proxy, and backend are connected
- Support for clusters that span multiple environments/clouds
- Declarative approach using YAML files

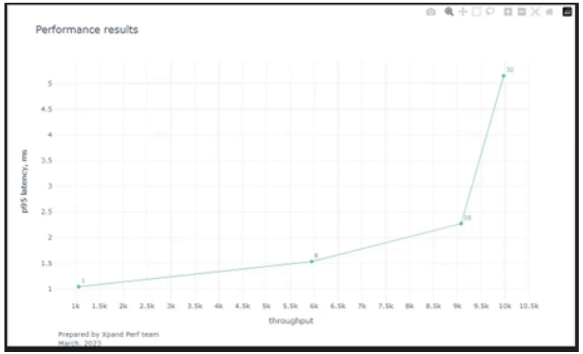


DEMO

https://drive.google.com/file/d/10lVFvqI9seQI26tGCHkAYxzg6Jxq7Brg/view?usp=share_link







CAPABILITIES

Supported Clouds

- AWS
- GCP
- Colocation

Supported Cloud Database Services

- SkySQL
- Cockroach Cloud

Supported Databases

- MariaDB Enterprise Server
- MariaDB Community Server
- MariaDB ColumnStore
- MariaDB Xpand
- MySQL
- PostgreSQL
- Aurora MySQL & PostgreSQL
- AlloyDB
- TiDB

Supported Benchmarks

- Sysbench
- Benchbase
  - TPC-C, TPC-H, CHBenchmark
- HammerDB

Monitoring Services

- Prometheus
- Grafana

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Real-world Usage

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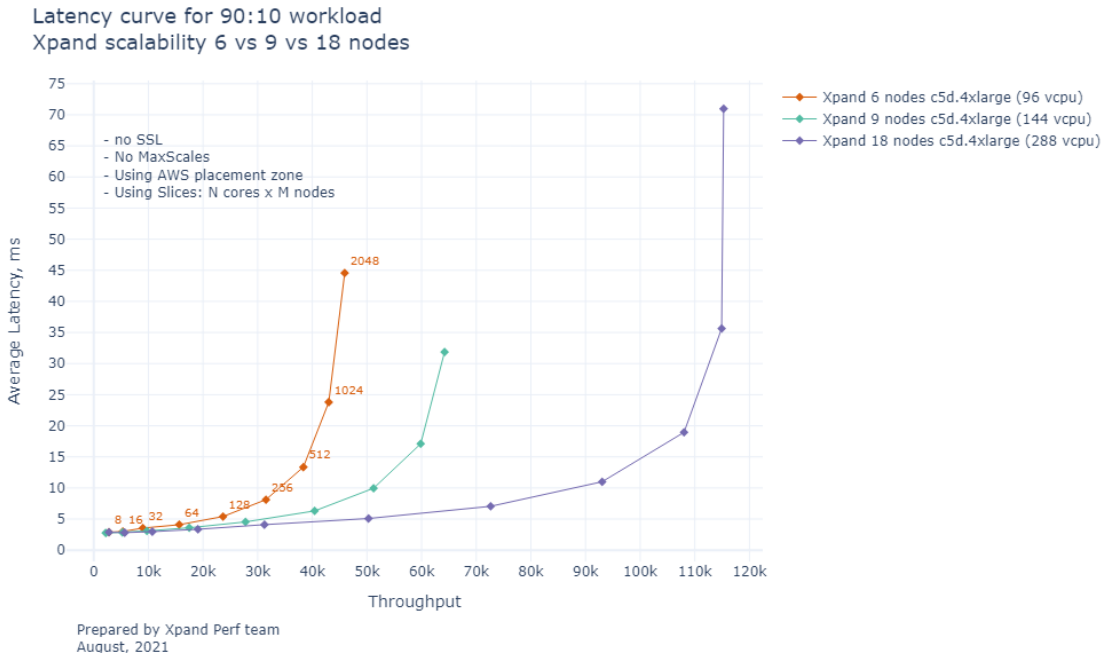
Conducting Scalability Tests

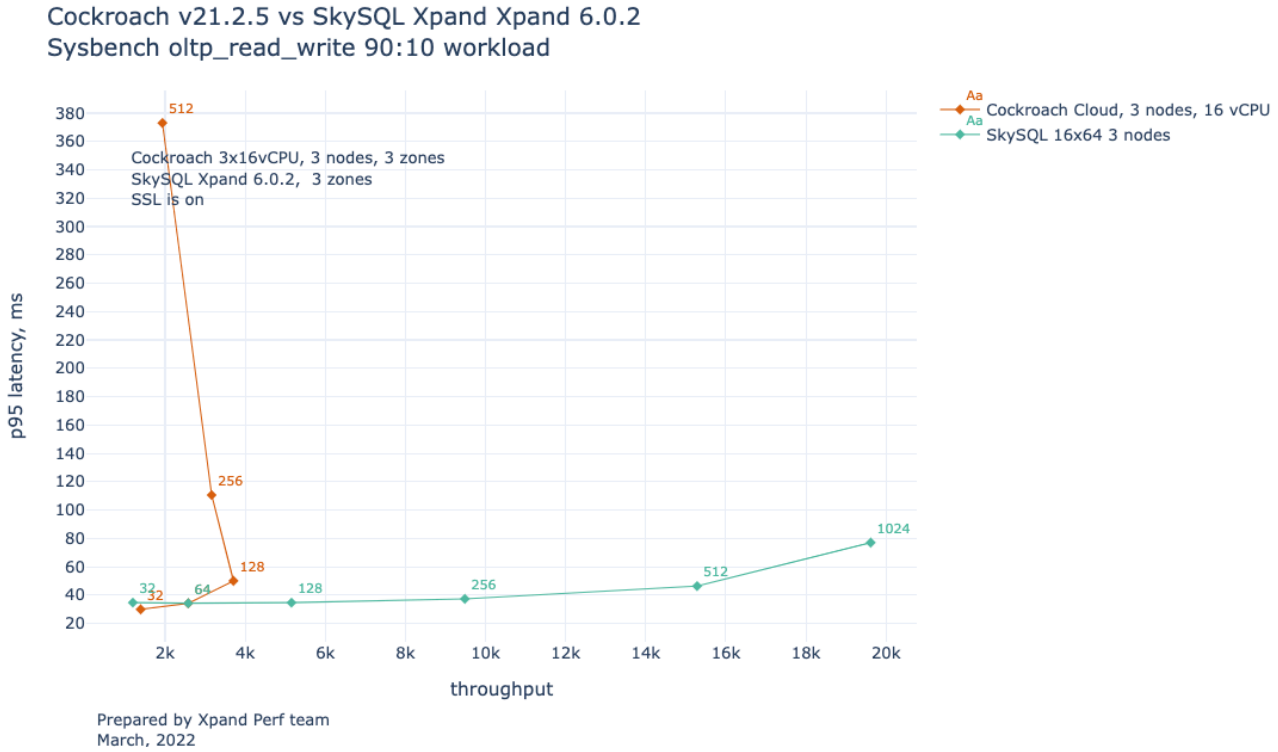
- Override config options from command-line, for example:

  -- backend.count=18

- Create multi-variable experiments
- Xpand scales nearly linearly for OLTP applications



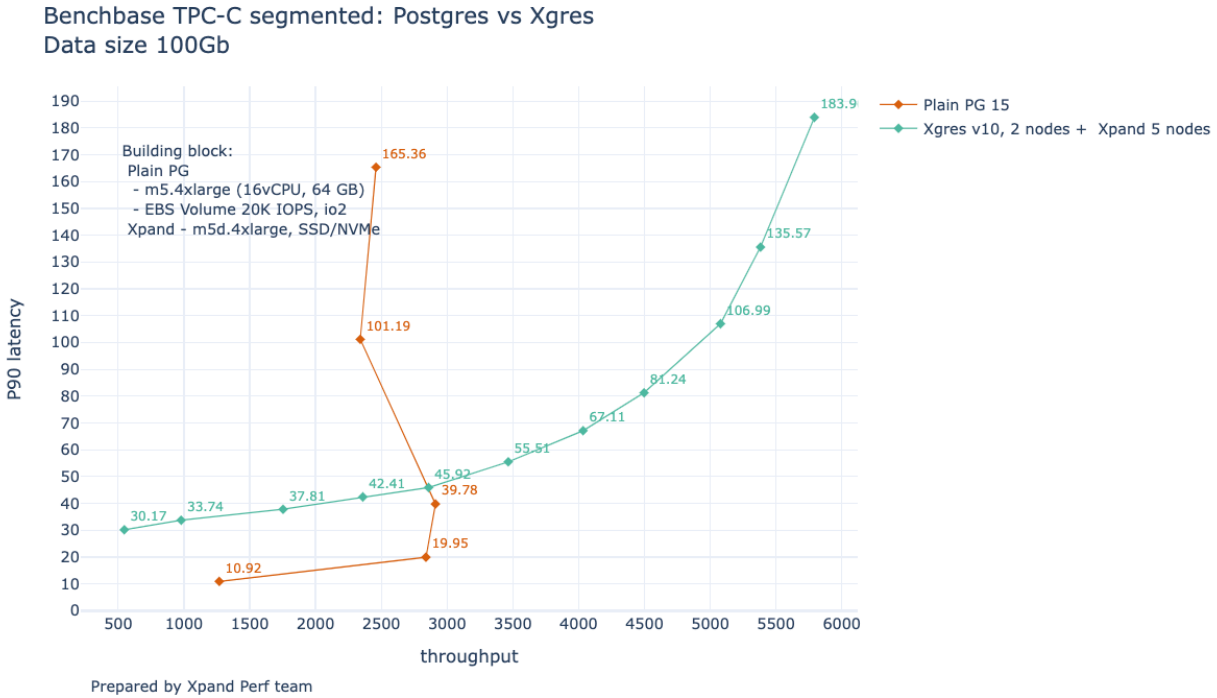
Benchmarking Databases



- Multi-environment testing, e.g. Drivers in AWS, different backends

Testing New Features

- Xgres = Postgres queries processed by Xpand
- Solves scale limitations and improves resilience
- Challenge to implement in Xbench



Extending Xbench

- Xgres is a proxy and backend
- Inherit existing Postgres backend implementation
- Cluster maintains logical connectivity (topology)

```
proxy:
    klass: proxy.Xgres
    klass_config_label: latest
    count: 1
    zone: us-west-2a
    os_type: Rocky8
    instance_type: m5d.4xlarge
    network: *public_cloud
    storage: *ephemeral_nvme
backend:
    klass: backend.Xpand
    klass_config_label: xgres
    count: 3
    zone: us-west-2a
    os_type: RHEL7
    instance_type: m5d.4xlarge
    network: *public_cloud
    storage: *ephemeral_nvme
```

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NEXT STEPS

Check out these sources to learn more about MariaDB

- **Xbench is on its way to open-source status**
  - https://github.com/mariadb-corporation/xbench-community
- **Read the full article here:**
  - https://mariadb.com/resources/blog/mariadb-xpand-crunches-cockroach-with-sysbench/
- **Reach out to MariaDB for more information!**


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THANK YOU