

Cloud Heterogeneity and characteristic testing



Cloud native

- Super! 😊
 - Scalability
 - Fault tolerance
 - Strong Lifecycle Management
- App must be able to run everywhere in the cloud, host-independently

Homogeneous environment

or

Application support for multiple environment versions



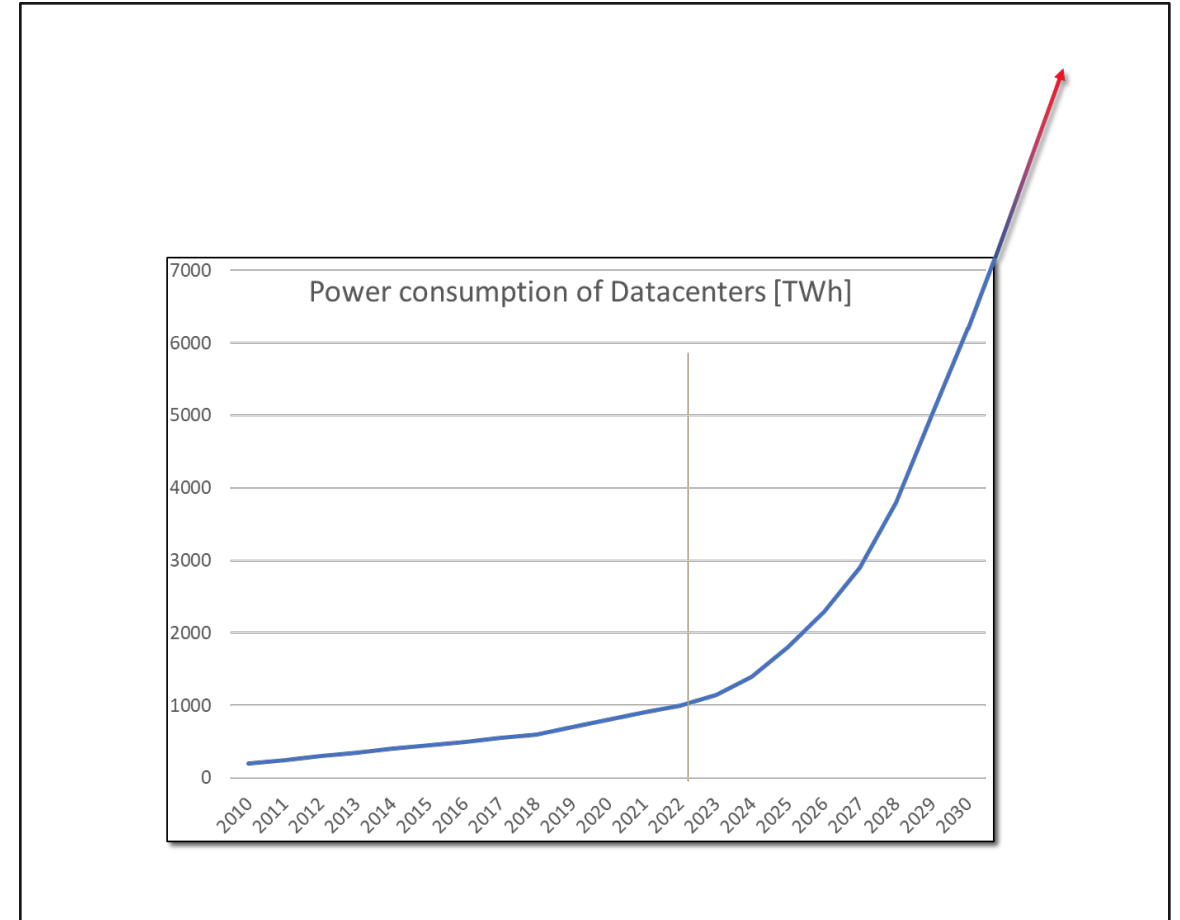
Homogeneous environment



- Same CPU, Same memory, Same storage, Same network everywhere
- Requires huge power!

A pure cloud native application can consume up to 100-times (!) more power than an accelerated version.

Not Sustainable



HW Heterogeneity – in clouds



Bain report

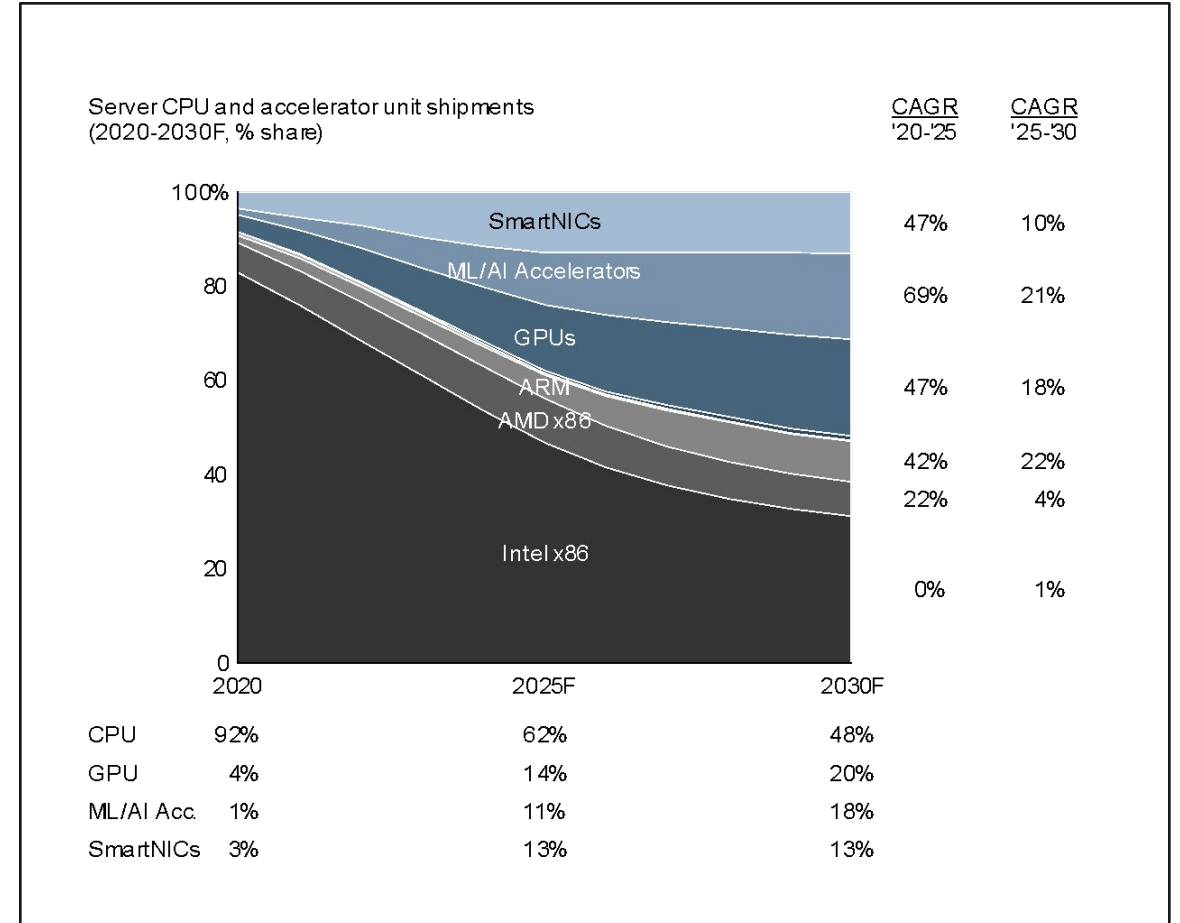
More heterogeneous CPU arch

AMD and Arm are coming up

Risc-V is also coming

Focus on HW accelerators

Mainly GPU, TPU and SmartNIC

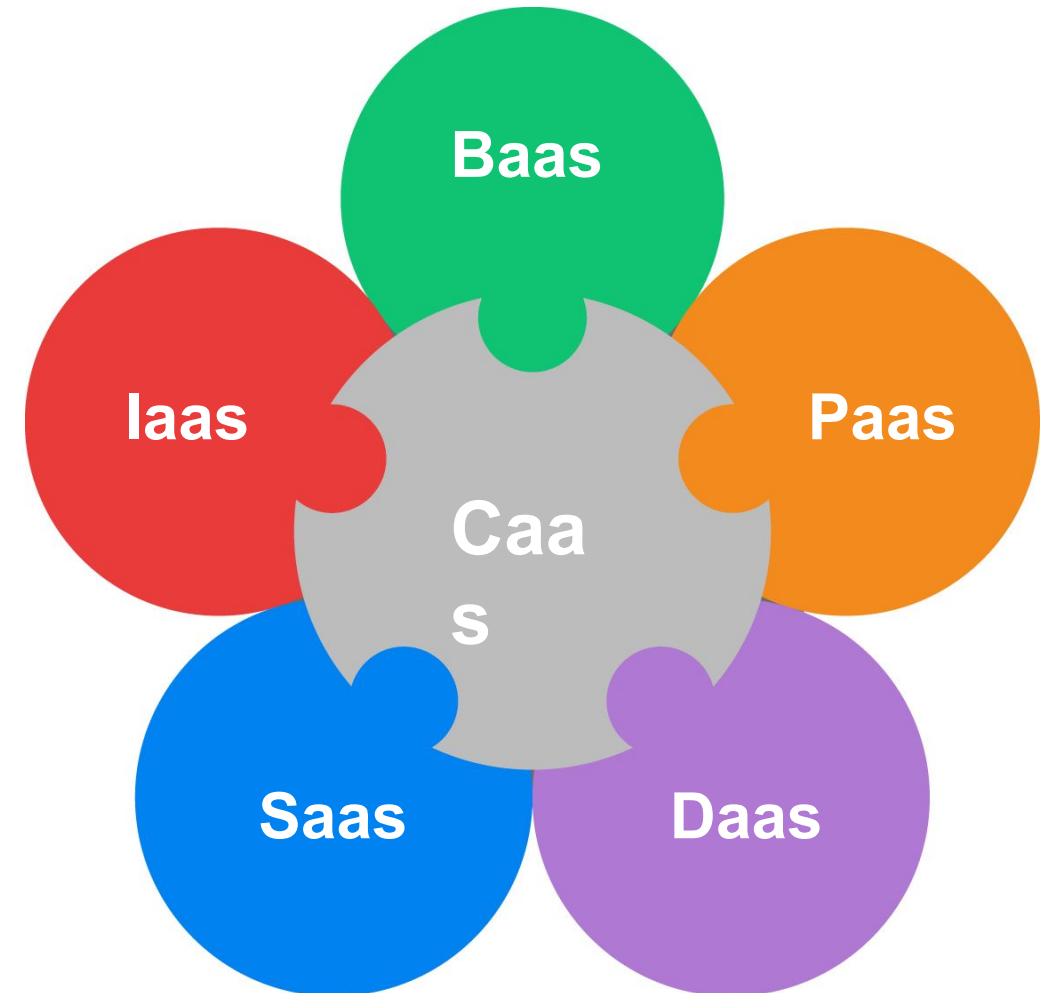


SW environment



- Multiple cloud providers
- Cloud environment is already different, and heterogeneous
 - Different infrastructure
 - Different services
 - Different environments
 - Different types of solutions
 - Different settings
- Differences affect multi-cloud applications

To support multiple HW and SW environment, we need to test application for them, and for the combinations of them.



How to test?

- Functional testing ✓

- Characteristic testing

- To write multi-cloud apps...
- To dimension your application...
- To sign Service Level Agreements

Usually slow and expensive



How to test?

- For heterogeneous environment
 - For every supported HW combinations
 - For every supported SW environment

- Can be hundreds or more
Super resource-demanding

Current testing method is not sustainable

We need a new one



