Performant PaaS Cloud

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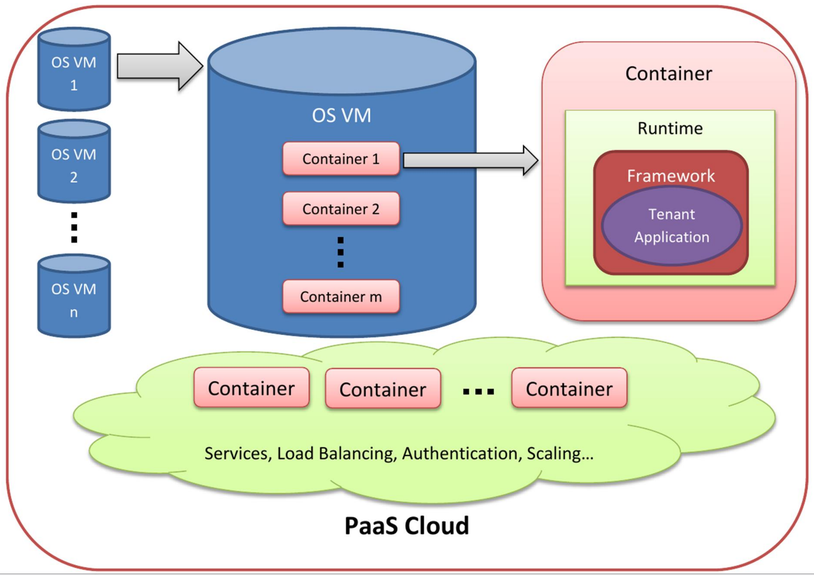
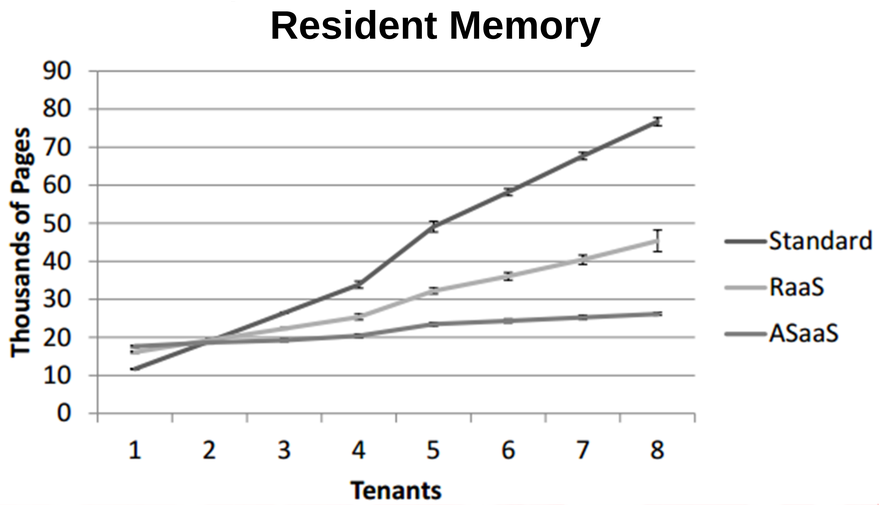
PaaS Clouds

- Platform-as-a-Service (PaaS) clouds abstract most of the software and hardware stack
- E.g. IBM Bluemix, which uses Cloud Foundry



Application Server as-a-Service (ASaaS)

- Maximize the sharing of the software stack
- Application server: safely shared
- Requires a Runtime as-a-Service (RaaS)
- We used IBM's Multitenant JVM
- Significant memory reductions
- Better response time for few tenants

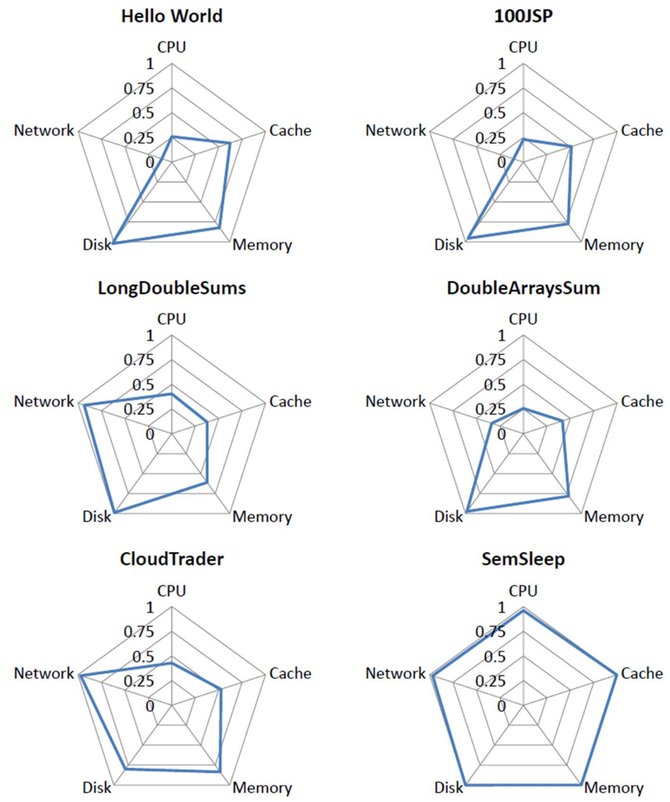


Performance Interference

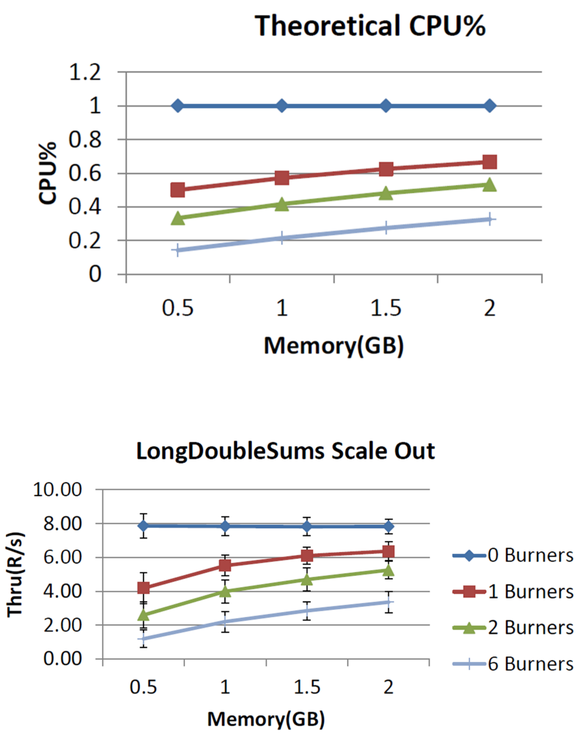
- Tenants interfere with each other
- Especially when placed on the same host

CloudGC

- Garbage Collection (GC): Automatic memory deallocation
- Causes performance degradation and bottlenecks
- Neglected when discussing cloud performance
- We created *CloudGC*
  - GC-oriented Java EE benchmark
  - Highly configurable and versatile
  - Compare clouds, runtimes, GC settings
- We propose a set of GC, cloud-oriented performance metrics
  - Investigated ideal starting heap size for cloud applications



Resource-Slowdown classification



Scaling:
CPU% modeling and prediction