Reducing Garbage Collection Interference on Clouds

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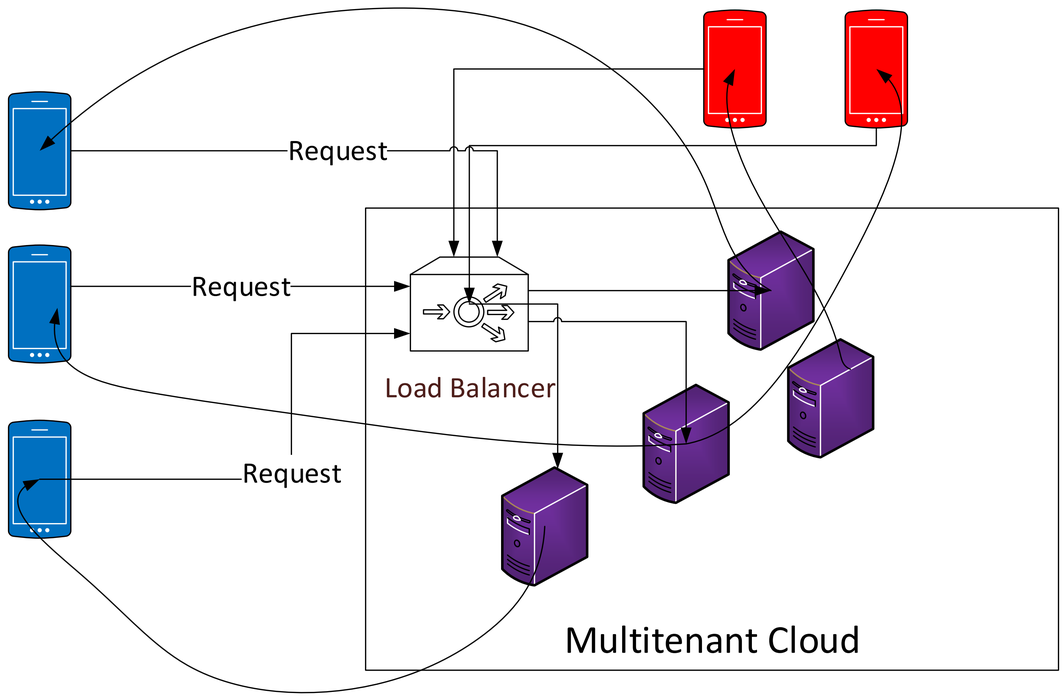
Interference in Multitenant Clouds



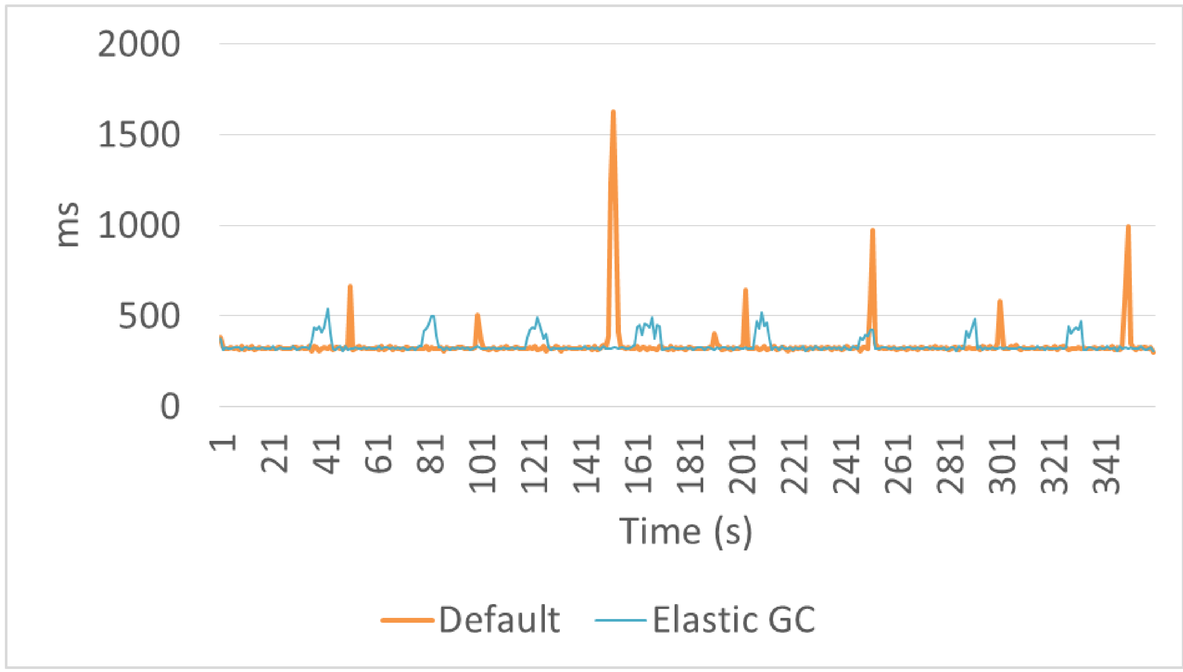
Clouds limit their tenants' access to resources. However, if they run on the same host, they can still interfere with each other.

High-level languages (Java, Node.js, C#, etc.) offer Garbage Collection (GC) and are often chosen for cloud deployments. However, GCs are CPU-intensive and can cause interference.

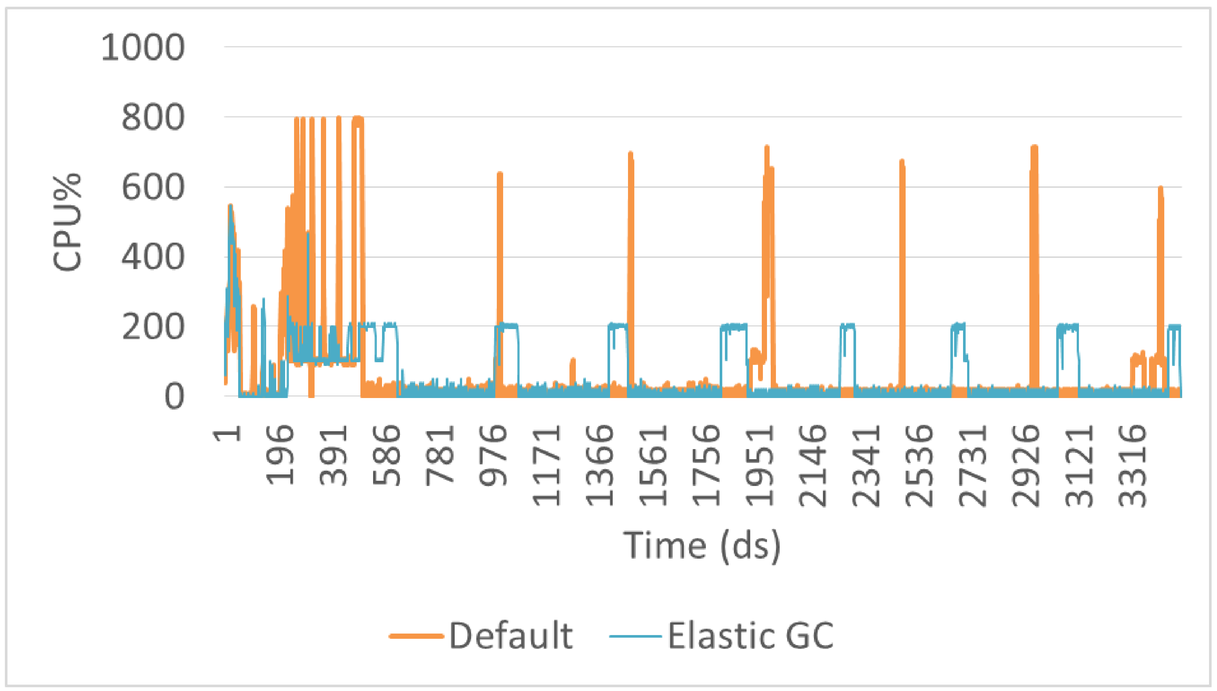
Elastic GC

Elastic GC is a proposed technique that mitigates the GC interference of a tenant to its neighbors. It detects periods of low load, during which, it limits the GC to a fraction of the available resources.

Sample Run



The top graph shows the response time of a neighboring tenant. Elastic GC produces shorter but more frequent response-time delays.



The bottom graph shows the CPU utilization. CPU spikes occur during GCs and the Elastic GC techniques keeps them at lower levels; thus, mitigating interference.