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ICE: An Integrated Configuration Engine for Interference Mitigation in Cloud Services

This nonintrusive solution leverages existing load balancers and web server configurations to quickly detect and mitigate performance interference in virtual machines within cloud services.

Cloud computing is rapidly growing into a disruptive technology that changes our everyday lives. The scalability, elasticity, high availability, and reduction in infrastructure and labor cost offered by cloud computing has enterprises rapidly moving their storage and online services to the cloud. The key technology that underlies all cloud services is known as server virtualization, a process of allocating the dedicated resources of a virtual machine fairly between users. However, a problem with partitioning these resources fairly exist that can impact the performance of virtual machines called performance interference.

Researchers at Purdue University have developed a technology that mitigates the problem of performance interference in a nonintrusive and lightweight manner by leveraging the configurations in existing load balancers and web servers to predict and apply good configurations during periods of interference. This solution can be incorporated into existing cloud services with ease and includes an interference detector based on hardware countermeasurements in addition to a two-level configuration engine for mitigating interference in web server clusters.

Advantages:

-Nonintrusive solution to performance interference

-Detects and mitigates interference quickly in changing conditions

Potential Applications:

-Cloud computing

-Cloud infrastructures

-Server efficiency

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Authors
Saurabh Bagchi
Amiya Maji
Subrata Mitra

Further information
Matt Halladay
MRHalladay@prf.org

Erinn Frank
EEFrank@prf.org

View online

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