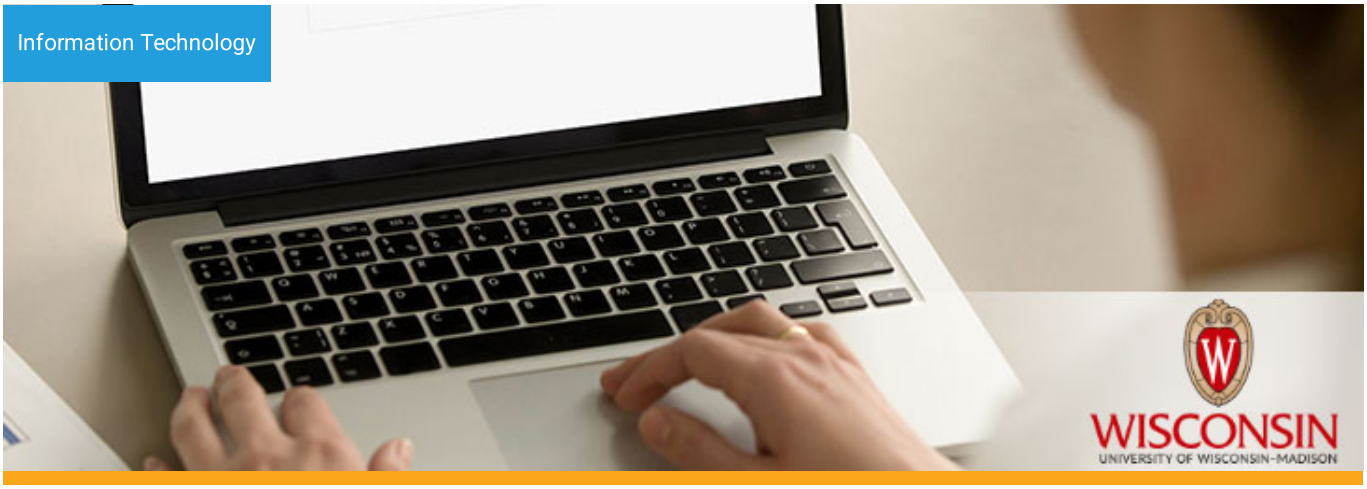
Information Technology



Placement Gaming Empowers Cloud Users to Assess Service

View U.S. Patent No. 9,128,739 in PDF format.

WARF: P130021US01

Inventors: Thomas Ristenpart, Michael Swift, Ari Juels, Benjamin Farley, Venkatanathan Varadarajan, Kevin Bowers

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing simple techniques for exploiting differences in cloud performance to improve the speed and cost of tasks.

Overview

With public cloud computing, customers pay a flat hourly rate for a bundle of virtualized resources called 'instances' from a service provider. Providers may sell a variety of instance types that offer some level of CPU power along with storage, memory, network, disk and application services.

However, not all instances of a given type are created equal, and performance may vary dramatically from user to user and between different clouds. A major culprit is infrastructure: as data centers grow, new and old hardware (switches, disks and CPU architectures) get mixed and some components modify. Network topologies can vary too, with some routes supporting higher bandwidths than others.

Trying to enforce uniform performance and identical systems is impractical for providers. However, as the demand for cloud computing grows, new tools must help customers make sure they're getting the best performance for their money.

The Invention

UW–Madison researchers and others have developed methods to exploit performance inequalities in public clouds using a strategy called placement gaming. In this way, instances can be assessed and chosen by a user.

The approach uses two simple mechanisms. The first is up-front exploration, in which a customer launches more instances than needed and retains only those predicted to perform well. With the second mechanism, the customer can choose to migrate an instance (shutting it down and launching a fresh copy) based on projections of future performance.

Criteria for determining whether to stay or migrate use estimations of an instance's future performance and may consider historical performance of a particular task or job.

Applications

- Software-based product for public cloud computing
- Useful for 'middlemen' companies that buy and resell from cloud providers

Key Benefits

- Boosts efficiency
- Empowers customers to optimize service
- Lowers costs and/or increases performance

- No need to understand cloud infrastructure
- Strategy requires no assistance from cloud providers and is immediately deployable.

Additional Information

For More Information About the Inventors

- Michael Swift

Related Technologies

- WARF reference number P120286US01describes a framework that recognizes middleboxes as first-class entities and enables cloud users to optimize their usage.

Publications

- Farley et al. More for Your Money: Exploiting Performance Heterogeneity in Public Clouds. Proceedings of the 2012 ACM Symposium on Cloud Computing (SOCC), October 2012.

Tech Fields

- Information Technology : Computing methods, software & machine learning

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842