Competitions among Service Providers in Cloud Computing: A New Economic Model

ABSTRACT

- Cloud computing has emerged as a new computing paradigm, with provisioning model generally consisting of cloud service providers (CSPs), network service providers (NSPs), and end users.
- The associated economics has opened up a new research area; and with the expansion of the cloud computing market, the relationship between CSPs and NSPs, is changing profoundly.
- In addition to providing the default network services, traditional NSPs, in attempt to compete with CSPs, have started offering cloud services to end users.

CONTINUE

- Though much progress has been made toward addressing competitions among CSPs themselves or among NSPs themselves, few studies have focused on the competition between CSPs and NSPs.
- In this paper, we investigate the problem of insufficient studies on the competition between CSPs and NSPs by presenting a new economic model to characterize the competition between CSPs and NSPs, and by conducting thorough theoretical analysis as well as numeric experiments to validate the proposed model.

EXISTING SYSTEM

- **C**LOUD computing is a recently emerged paradigm in the information technology field that reshapes the way of service management and provisions.
- Cloud computing is driven by economies of scale, in which a pool of abstracted, virtualized, dynamically scalable computing functions and services are delivered on demand to external customers over the Internet .
- An NSP may lose some of its revenue due to its competition with CSPs that provide the same cloud services as the NSP does.

CONTINUE

- A CSP, for the best interests of itself, however, needs to not only cooperate with NSPs for service delivery, but also compete with them for more cloud market shares.

PROPOSED SYSTEM

- We investigate the competition between CSPs and NSPs and develop a game-theoretic model, in which the payoff of a service provider is formulated by the gain that is proportional to its market share and the defined utility.
- We formally prove the existence and the uniqueness of the Nash equilibrium (NE) of the model, based on which we propose an iterative algorithm to compute the NE.
- The algorithm iteratively updates the service rate of a service provider (either CSP or NSP) and terminates when the currently generated value of service rate is greater than one or the difference of the service rates yielded by the last two consecutive iterations is less than a certain small number .

CONTINUE

- We conduct thorough theoretical analysis and numeric experiments to determine the factors such as replacement coefficient, connectivity rate, and service coefficient that will affect the market share and the profit of CSPs and NSPs.

HARDWARE REQUIREMENTS

- Processor - Pentium –III
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Floppy Drive - 1.44 MB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

SOFTWARE REQUIREMENTS

- Operating System : Windows 8
- Front End : Java /DOTNET
- Database : Mysql/HEIDISQL

CONCLUSION

- A service provider with a small replacement coefficient has a competitive edge and a relatively high profit.
- Thus, service providers should strive to make their business unique and multifarious to reduce the chance of being replaced by their peers.
- A higher connectivity rate means that a service provider would need to invest more on improving its customer service quality and therefore would result in more costs and less profits. As such, a service provider may increase its profit by somehow lowering the connectivity rate.

CONTINUE

- A larger service coefficient indicates that a service provider's market share and profit depend more on its service rate, and that the service provider is more vulnerable in the fluid competition over the cloud computing market.
- The Nash equilibrium point would increase when the service coefficient decreases, or the connectivity rate decreases, or the replacement coefficient increases.
- The total social utility may be increased by properly increasing the service rates of CSPs and NSPs, the connectivity rate of cloud services, or the amount user service requests.

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