SLA Guaranteed Virtual Machine Consolidation for Computing Clouds

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摘要:
One of the most attractive features that computing clouds can offer is that the system maintaining cost can be reduced by consolidating virtual machines (VMs) into a few powerful physical servers. In this paper, the problem of maximally consolidating heterogeneous virtual machines into heterogeneous servers while protecting the service level agreement of each virtual machine is investigated. A generic robust VM workload consolidation framework is proposed based on the mathematical programming model of the VM consolidation problem. The proposed framework acquires several attractive properties like adjustable resource provisioning aggressiveness, good scalability and wide adaptability to different cloud applications. Other VM consolidation schemes with specific objectives can be easily extended from the proposed VM consolidation framework.

报告人简介:
Danny H.K. Tsang received the Ph.D. degree in electrical engineering from the Moore School of Electrical Engineering at the University of Pennsylvania in 1989. He started his academic career as an Assistant Professor at Dalhousie University in Canada. He later joined the Department of Electronic & Computer Engineering at the Hong Kong University of Science and Technology in 1992 and is now a professor in the department. He was a Guest Editor for the IEEE Journal of Selected Areas in Communications’ special issue on Advances in P2P Streaming Systems. He also served as an Associate Editor for the Journal of Optical Networking published by the Optical Society of America. He currently serves as Technical Editor for the IEEE Communications Magazine. During his leave from HKUST in 2000-2001, Dr. Tsang assumed the role of Principal Architect at Sycamore Networks in the United States. He invented the 64B/65B encoding scheme (which received a US Patent) for Transparent GFP and it was adopted by ITU’s GFP-T. He is a senior member of IEEE since 2000 and his current research interests include P2P video streaming, cognitive radio networks, cloud computing and smart grid.