

Software Fault Tolerant System by using Virtualization Technology

Htet Wai Aung¹, Thandar Thein²

University of Computer Studies, Yangon

kohtetwaiaung@gmail.com¹,

thandartheinn@gmail.com²

Abstract

The availability of the complex IT system for everything, everywhere, at all time is a growing requirement. However, the availability of IT infrastructures is still a massive challenge currently. Unexpected downtime is mostly caused by software failure rather than hardware failure. Software failure can occur at the operating system level and application level. Software aging was observed that once the software was started, potential fault conditions gradually accumulated with time leading to either performance degradation or transient failures or both. The most natural procedure to counteract such software aging is to apply the well-known technique of software rejuvenation. In this paper, Software Fault Tolerant System is developed by applying virtualization technology and Software Rejuvenation methodology. In order to improve availability for IT systems, Active-standby virtualized clustering architecture is presented and proactive software rejuvenation (VM Switching) is applied. An availability Model is developed using stochastic modelling and evaluated it through both numerical analysis and SHARPE (Symbolic Hierarchical Automated Reliability and Performance Evaluator) tool simulation. Web based Clinical Information System is implemented on virtualized platform and performance evaluation is carried out.