Homework #1 CPT_S 562  
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I am very interested in the topic of Dependability of Clouds, Data Centers, and Virtual Machine Technology, it has occurred in more than one conferences in DSN. Specifically, I am interested in the performance of cloud computing, the security of cloud data storage, and privacy protection of cloud data.

The first paper I read is “Addressing Memory Exhaustion Failures in Virtual Machines in a Cloud Environment” by J. Molina and S. Mishra [DSN 2013]. As we know, for any cloud computing application or service, it would use as much resources as it need, which would include memory usage. Also the cloud providers usually do not provide enough swap spaces for its application or service, especially when running in Virtual Machines [A. Molina 2013]. As a result, in case of Out of Memory, the users’ processes would be automatically killed and users would lose all the efforts. This paper proposed a solution to monitor the memory usage and dynamically create a swap space if necessary. This would improve the stability of the cloud based applications, especially for those which would deal with a large amount of data.

The second paper I am interested in is “Enabling Data Integrity Protection in Regenerating-Coding-Based Cloud Storage” by H. Chen and P. Lee [SRDS 2012]. To prevent data loss of local database from corruption, we usually strip data across multiple hardware devices, and regenerate data if some of the hardware devices failed. Similarly, the data on cloud would be stripped across multiple servers, and data would be regenerated in case of some of the servers failed [H. Chen 2012]. Now the problem is that how to ensure that the data is from the right source, i.e., how to guarantee the data integrity during the data regeneration. This paper proposed a data integrity protection scheme, which is supposed to solve the problem.

The third paper I am interested in is “Can We Beat DDoS Attacks in Clouds?” by S. Yu etc. [TPDS 2014]. As we know, DDoS is the short for Distributed Denial of Service attack. Attackers would first compromise some systems via a Trojan or something else, and then use those zombies/botnets to overwhelm the cloud application or service to make it unavailable. Simply put, because of its instinct properties, the cloud application or service would be one of the most popular targets for the DDoS attack [S. Yu 2014]. How to prevent it? This paper proposed a dynamic resource allocation strategy to counter DDoS attacks against individual cloud customers, and stated that the strategy is effective in defeating the DDoS attack.

References
