Weekly Report 3

Pankaj More (Y9227402)

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Papers Read

- Armbrust, Michael, Armando Fox, Rean Griffith, Anthony D. Joseph, Randy Katz, Andy Konwinski, Gunho Lee et al. "A view of cloud computing." Communications of the ACM 53, no. 4 (2010): 50-58.

- Abts, Dennis, and Bob Felderman. "A Guided Tour through Data-center Networking." Queue 10, no. 5 (2012): 10.

Summary

The first paper starts with a clear and precise definition of the term "cloud computing". Then it gives a list of specific features that are only applicable to cloud computing and not conventional data centers. One important benefit of cloud computing that was new to me was the concept of "cost associativity". It simply means using 10000 server X 1 hr costs the same as using 1 server for 10000 hours. It helps save a lot of time in large compute-intensive tasks without incurring additional costs. Reading the paper, it looks like for new services with flexible requirements , cloud computing is downright essential and not just a feature to have and not using cloud computing's advantages might feel like competing with advanced aliens with magical technologies. The paper also emphasizes on top 10 obstacles for widespread adoption of cloud computing especially in the enterprise and also hints at how those obstacles can be solved and what opportunities lie in solving those problems.

The second paper talks about networking issues inside a data-center. It distinguishes between two kinds of flows "elephant" flows and "mice" flows. Understanding the impact of "elephant" flows on traffic requirements is essential for optimal traffic planning. The network topology plays a very important role in designing efficient data center networks. It affects many parameters such as performance, path diversity, redundancy, fault resilience, average and maximum cable length and cost. There are mutual trade-offs between these parameters

which makes the problem exceedingly hard. Conventional layer 2 and layer 3 routing algorithms are quite unsuitable and new routing algorithms like VL2 and PortLand have been proposed. We will look at these algorithms in future readings.