Reading Report #4
Paper: Delayed Internet Routing Convergence
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The paper's strength lies in their experimental instrumentation of key portions of the Internet without solely relying on simulation results, and the BGP convergence behaviors they observed based on the 2-year long data collection. The experiment results are convincing, but their analysis is not that convincing when they tried to justify their observations.

They adopted an oversimplified BGP convergence model for analysis. For example, modeling each AS as a single node, choosing a full mesh network topology, unbounded delay and treating a BGP processing as a single linear, global queue, etc. These assumptions do not reflect the reality of the Internet, thus cannot be used as a good indicator for BGP convergence. They spent lots of time talking about upper bound and lower bound on convergence. But both of these bounds are unlikely to occur in practice. Unfortunately, they further analyzed the results based on this oversimplified model to back up their previous mentioned results. It gives me the feeling that their analysis does not make the results more convincing, though intuitively, these results do make sense.

In general, the model and analysis appears in such a way that they seems to be used to deliberately justify the experiment results and observations.

I would argue that trying to build an analytical model for BGP convergence may not be feasible due to the complex nature of the Internet thus should not be used to back up the experiment results. Rather, we need to shift our focus to the data itself. The date set collected during the 2-year's experiment is a valuable resource which are worthy of exploring since they are real Internet inter-domain routing data. Unlike simplified BGP convergence model, these data cannot lie and should reflect the reality of the Internet. Thus it matters how we are going to use and interpret the data. The simple exploratory data analysis combined with some basic data visualization techniques might be the first step for us to get some insights into why Internet behaves in such way. The more-in-depth and complicated data analysis with advanced data visualization can be applied to follow up.

I also noticed that the paper always present figures with a subset of data and a cutoff scale for clarity purpose. They also mentioned correlation between observations in a couple of places in the paper without using large amount of data and visualization to backup this correlation. These might be a sign that they did not do many in-depth data analysis and visualization, which is something they could have done for improvement and more sound results.

Overall, the paper is strong in its first part (section 1,2,3 and 4), but weak in second part (section 5 and 6). It is a good engineering practice to measure the Internet BGP convergence behavior along with their sharp observations, but it is lack of mature theoretical and analysis support.