

Reading Summary: On the performance and fairness of BitTorrent-like data swarming systems with NAT devices.

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1 Please describe the problem(s) in your own words. Is the problem important at the time of paper publication, and how about now? Why?

The problem this paper addresses is that BitTorrents unchoke mechanism is unaware of and unfair to NAT peers. This paper also addresses the need for an analytical model to characterize P2P systems in the presence of NAT.

2 Please describe the main idea(s) in your own words. How is the idea different from the existing work at the time of paper publication? How does the idea impact the follow-on work till now?

The paper covers the effect NAT peers have on P2P systems and the fairness of the system in the presence of NAT peers. The paper identifies both that NAT peers have less neighbors because they cannot take incoming connections and they disproportionately provide to public peers because they cannot connect between each other. The paper concludes that the presence of NAT in Bittorrent and similar P2P systems destroys fairness which occurs when there is no NAT.

The paper goes on to propose that if a peer can be identified as NAT then it is unchoked with a certain probability. This unchoking of NAT peers reintroduces fairness according to Jain's fairness index. Other existing work does not quantify the fairness of NAT peers if they address the presence of NAT peers at all.

3 Please list at least three most important things in this paper. Why do you think they were important at the time of paper publication? How about now?

1. Not using NAT traversal techniques is important as they are unreliable. It was important at the time of the paper as other techniques for using NAT with P2P required a successful NAT traversal. (Even more important today as NAT is everywhere)
2. Using a relatively small change to the unchoke mechanism you can achieve a much more fair system in the presence of NAT peers.
3. The first paper to quantify the effect of NAT peers on Bittorrent-like P2P systems.

4 Please list at least three things you think may need further improvement in this paper. Has the improvement appeared in the follow-on work already?

1. This paper fails to cover public peers pretending to be NAT for the benefits of gaining higher unchoke rates. This is important for any real world implementation.
2. The math and graphs were quite difficult to comprehend and required many read throughs. I felt there may have been an easier way to provide the information.
3. Although I understand the simulator was used I felt supporting materials and code changes would have made it more relevant to a real world solution.

5 Do you have some ideas of your own on this problem? Can you do something better or differently? How can you show that?

Although I don't know if others have done this, I believe another way to get fairness in the system is to use some fairness metric which is not dependent on current upload and download rates. This would likely require some form of proof of work. An analysis would have to be done on the fairness of the system to show the different characteristics of the heuristic.