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This paper address the popularity of peer to peer applications and the resulting interest in distributed hash tables (DHTs). By comparing some of the more popular DHT routing algorithms they try to determine where future algorithms should focus their efforts. The basic algorithms studied are tree, hypercube, butterfly, ring and hybrids of the various types. The algorithms are compared on how well neighbor selection is performed, how well routes are selected and whether or not sequential neighbors are supported by the algorithm. The basic conclusion is that algorithms based on the ring structure provide the most flexibility, great resilience to failures and good path length when compared to the other algorithms. An important point that they make is that end to end latencies can be greatly reduced by using an algorithm that allows neighbors to be chosen based on their proximity to the node.

Some of the graphs in the paper could have been better set up to show what was really happening. The graphs showing the increase in path hop-counts versus the percentage of failed nodes makes it look like at some point having more failed nodes gives shorter hop-counts. What was really happening was that there were more paths that were failing completely so they were not include in the path hop-counts and the paths that were succeeding were only to nodes that were close by and had short hop-counts. It would be particularly interesting if they had more specific comments on how to implement the next DHT algorithm and had results of their own algorithm to compare against all of the others.

As more and more traffic on the Internet is dominated by peer to peer file transfers the importance of having efficient DHT routing algorithms will continue to grow. Bittorrent applications in particular have seen a recent boom because they are often used for legal file sharing as opposed to the previous ones which have been dominated by illegal sharing. Using the insights given in this paper regarding the flexibility and resilience of various DHT algorithms could lead to future improvements in peer to peer transfers.