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Using the Simplex method, a popular algorithm for linear programming, the authors calculated the topology lifetime of several different network designs. They examined small three node and much larger network configurations as well as exploring the multiple different types of network configurations such as dual ring, chordal ring, Manhattan Street, and hierarchical. Using the Simplex method, they examined how much traffic growth, both linear growth and unexpected surges, the designs could sustain before require more capacity to be added to the over all network. They were also able to break down the network to examine particular nodes to determine if and where there were any bottle necks. This new method of measurement is designed to be useful in evaluating current network design, designing new networks, and creating and updating existing links in networks.