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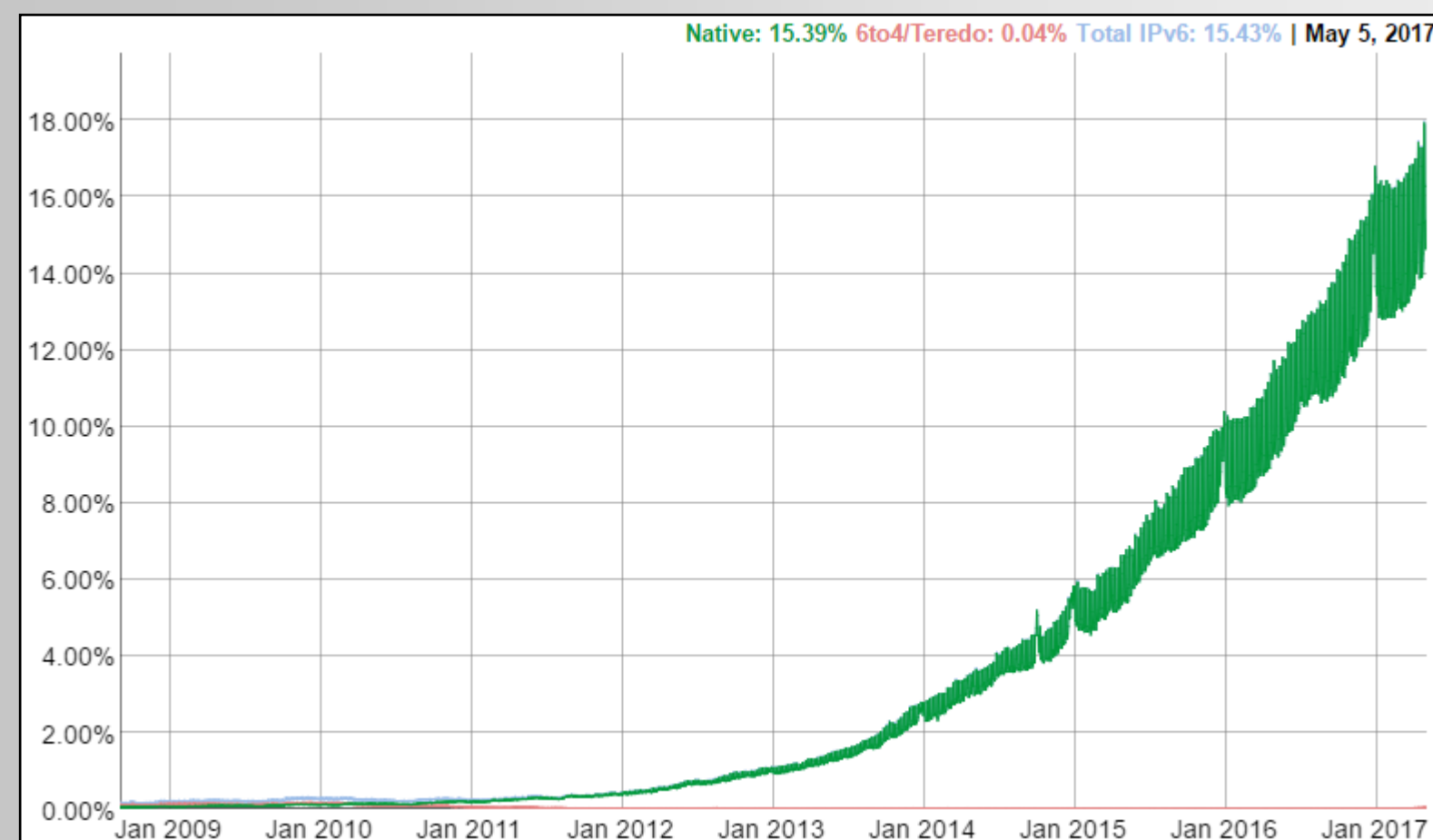
The Future of Internet Protocol and IPv6

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Background

Today our world revolves around internet more than ever before, and more than expected when it was developed. The internet protocol plays the main role in terms of making the interconnectivity possible. Currently IP version 4 still dominates the majority of internet traffic. However, the new IP version 6 has been developed in order to replace the exhausting version 4. Since the IPv6 introduction, this protocol has been making its increasing impact in the internet industry.



The graph shows the percentage of users that access Google over IPv6.

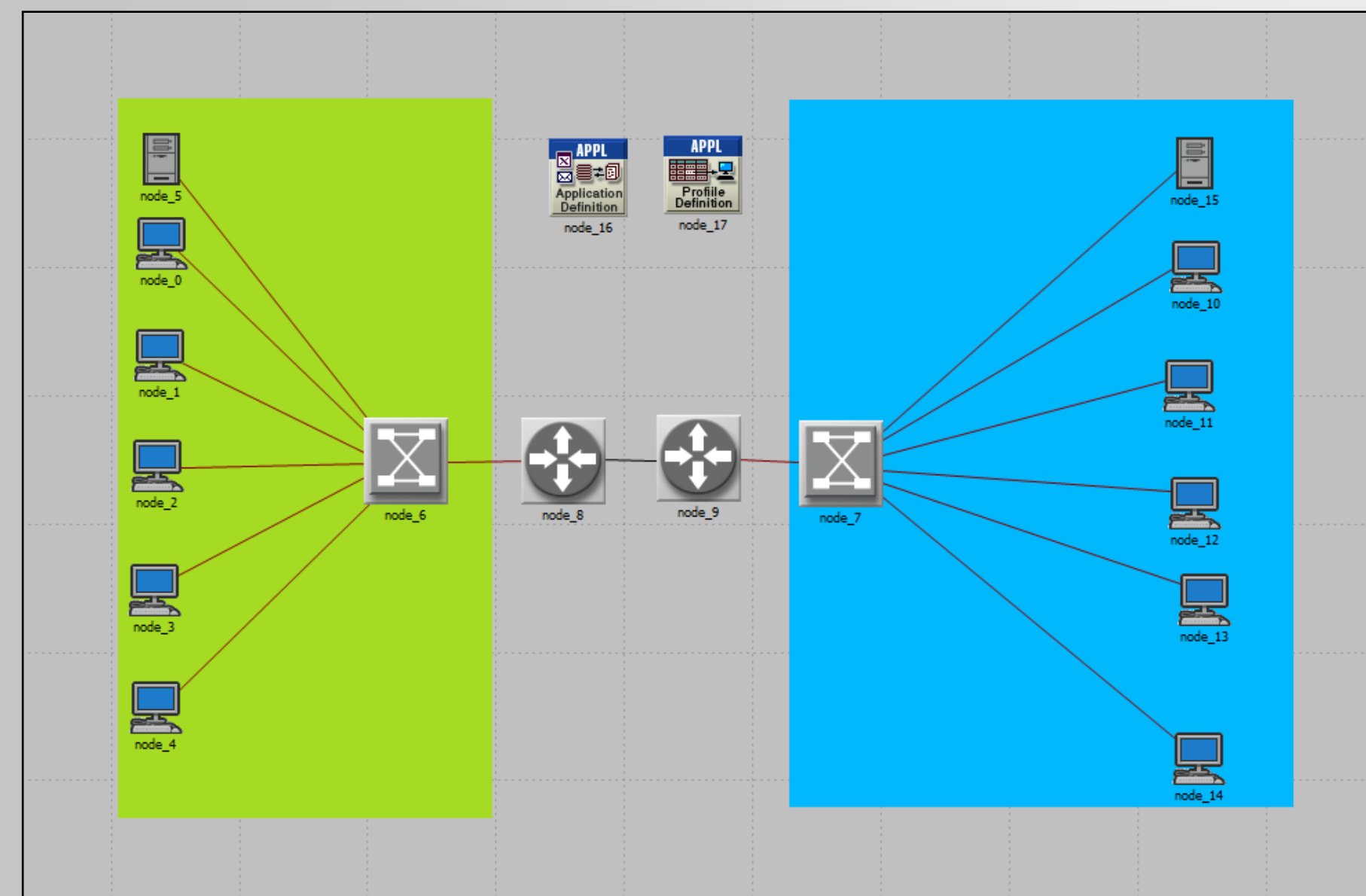
(source: Google)

Objectives

The experiment was intended to compare the both IPv4 and IPv6 in a practical environment. This can help us to understand all the significant differences between the two protocols in terms of all aspects of performance.

Experiment

To establish the performance differences between IPv4 and IPv6, the test has been performed and evaluated using a network simulation software called OPNET. The experiment was carried out by creating two scenarios with an identical network topology and configuration, the first scenario being an IPv4 based and the second one being IPv6 based.



The picture illustrates the network topology that was used in the experiment.

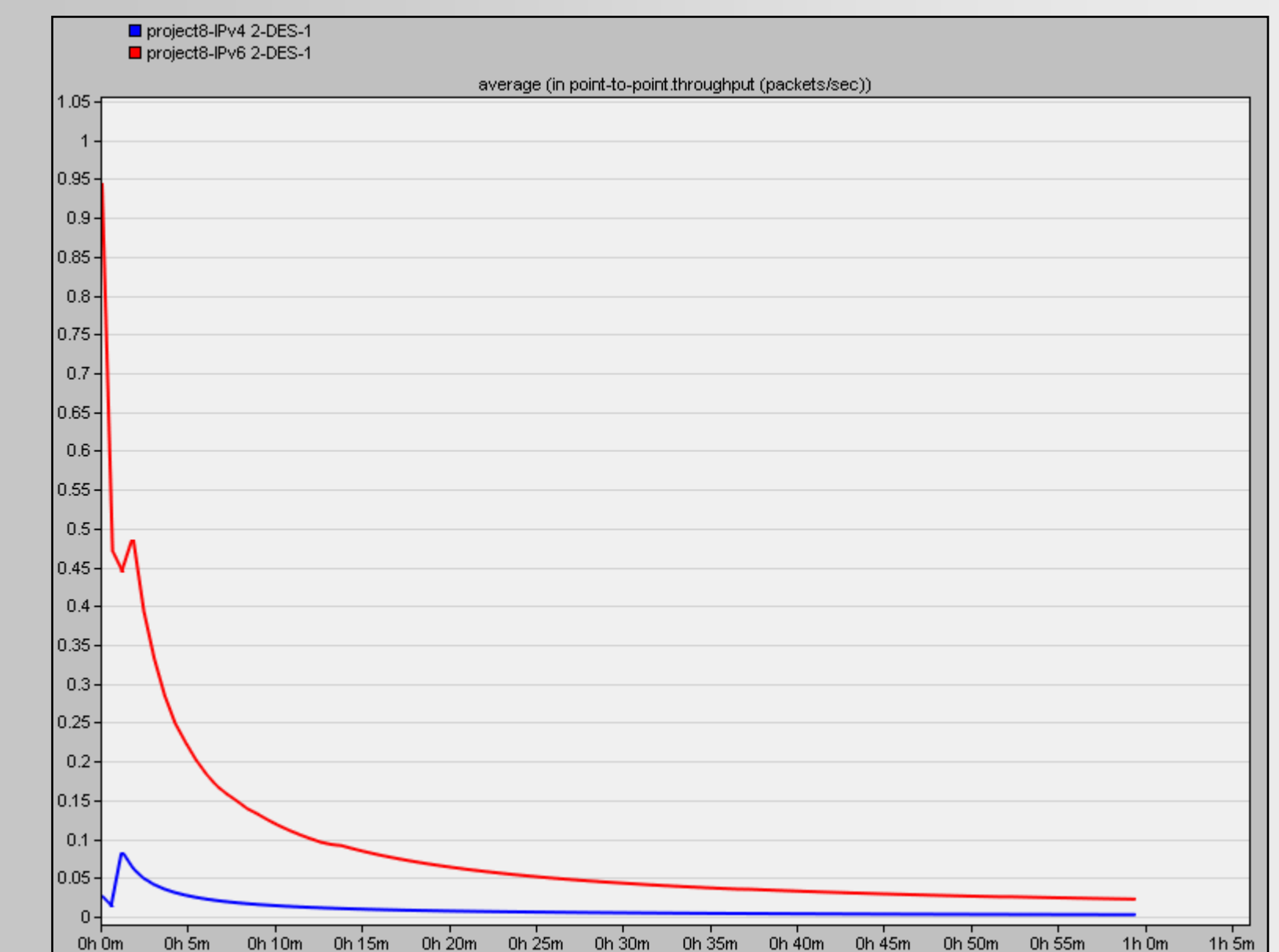
Results

The results that were collected and evaluated during this experiment have shown that the version 6 performs much more efficiently than its older version 4 in many performance metrics that are used in evaluating the quality of a network.

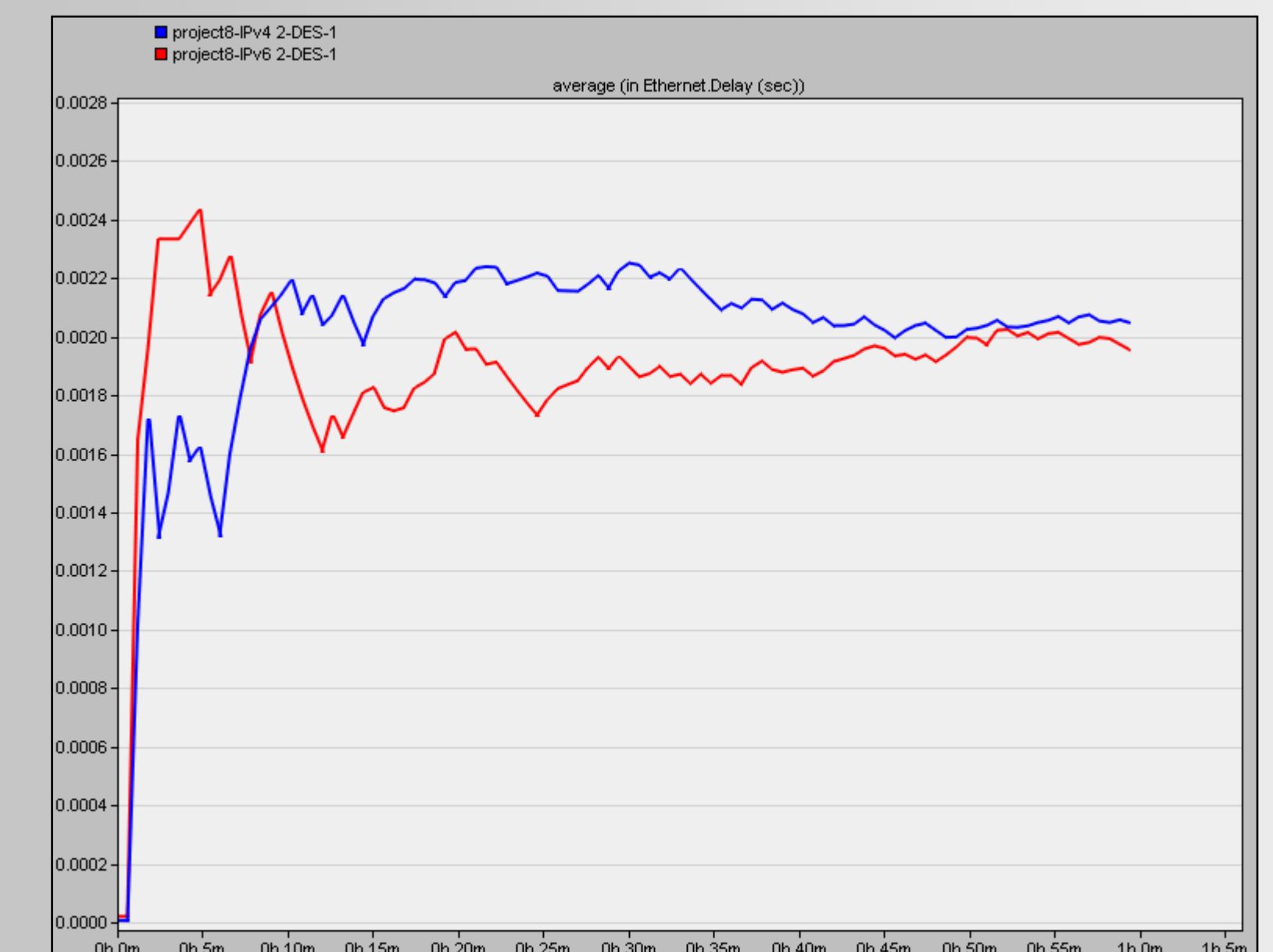
192.168.0.1

VS

2001:0db8:85a3:0000:0000:8a2e:0370:7334



IPv4 vs IPv6 throughput (packets/sec)



IPv4 vs IPv6 ethernet delay (sec)