An IPv6 Simulation Comparing OSPF and EIGRP Routing Performance

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***Abstract*—This undergraduate thesis investigates the comparative performance of OSPF and EIGRP in an IPv6 network simulation. Routing choices influence delay, loss, and responsiveness when traffic moves across a configured network. The author constructs a simulated IPv6 network, configures the two routing protocols, and compares round-trip time, response behavior, packet loss, delay, jitter, and bandwidth under the reported test setup. In the tested simulation, the manuscript reports better measured behavior for OSPF than EIGRP on the selected metrics. This is a result for that topology and configuration, not a general ranking of the protocols. The report does not include field deployment. Convergence, processor and memory consumption, scalability, and security were outside the reported comparisons. Different topologies, loads, and device implementations could change the relative outcome. The contribution is a documented student study or prototype whose stated scope can guide further testing.**

***Index Terms*—IPv6, OSPF, EIGRP, routing, simulation**

I. Introduction

Routing choices influence delay, loss, and responsiveness when traffic moves across a configured network. This thesis investigates the comparative performance of OSPF and EIGRP in an IPv6 network simulation. It begins from a practical engineering need and explains the technologies and workflow chosen for the case. The objective is to document a student implementation or comparative investigation, together with the evidence available in the manuscript. Broader operational or economic effects require separate measurements and are not assumed from the existence of a prototype [1]. Earlier ICTU student work on related designs is included here for context [2], [3], [4]. Related published studies provide context for the subject and methods [5], [6], [7], [8], [9], [10]. These contextual works were selected for this English summary; they are not asserted to appear in the original thesis bibliography.

II. Methods

The author constructs a simulated IPv6 network, configures the two routing protocols, and compares round-trip time, response behavior, packet loss, delay, jitter, and bandwidth under the reported test setup. The source is summarized through its stated design, implementation material, examples, and conclusion. Features shown in the manuscript are distinguished from proposals for later development. This review does not add a new experiment, fill missing measurements with estimates, or treat a planned capability as an observed result. The source thesis remains the provenance for the reported work [1].

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III. Results

In the tested simulation, the manuscript reports better measured behavior for OSPF than EIGRP on the selected metrics. This is a result for that topology and configuration, not a general ranking of the protocols. The report does not include field deployment. The report's screens, configurations, examples, or measurements constitute the evidence for this summary. A capability described only as a design intention is not counted as a validated operational outcome. No additional performance, adoption, financial, or safety figure has been introduced here. The result is interpreted within the scope of the student's documented setup [1].

IV. Discussion

Convergence, processor and memory consumption, scalability, and security were outside the reported comparisons. Different topologies, loads, and device implementations could change the relative outcome. A repeatable extension could publish configurations and traffic profiles, vary topology and load, and measure convergence and resource demand alongside the existing network metrics. These limitations affect how the evidence should be read. The current manuscript can support understanding of the design and reported demonstration, while independent tests would be needed for stronger claims. Any later deployment should document its environment and separate observed outcomes from intended benefits [1].

V. Conclusion

The thesis documents the comparative performance of OSPF and EIGRP in an IPv6 network simulation. In the tested simulation, the manuscript reports better measured behavior for OSPF than EIGRP on the selected metrics. This is a result for that topology and configuration, not a general ranking of the protocols. The report does not include field deployment. Convergence, processor and memory consumption, scalability, and security were outside the reported comparisons. Different topologies, loads, and device implementations could change the relative outcome. A repeatable extension could publish configurations and traffic profiles, vary topology and load, and

measure convergence and resource demand alongside the existing network metrics. Accordingly, the present contribution is a source-grounded account of the student work and its tested or illustrated scope. Claims about broader effectiveness should be assessed in later work using explicit evaluation conditions [1].

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