Lab WiFi Report

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ABSTRACT

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1 BACKGROUND AND OBJECTIVES

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2 METHODOLOGY AND CONCEPTS

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2.1 Selected Tools

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2.2 Network Performance Metrics

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3 EXPERIMENTAL SETUP AND TEST CASES

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3.1 Equipment and Configuration

In this section, we describe the hardware and software configuration used to perform our network performance measurements. Table 1 summarizes the main devices, their interfaces, and relevant specifications.

Table 1: Summary of Hardware and Network Configuration

Device	Key Specifications
PC1	Victus 16-s1005nl Notebook *Operating System:* Ubuntu 24.04.2 LTS *Ethernet Interface:* Realtek RTL8111/8168/8211/8411 *Wireless Interface:* Realtek RTL8852BE (802.11ax)
PC2	Microsoft Surface Laptop Go 3 *Operating System:* Ubuntu 24.10 *Ethernet Interface:* via Anker PowerExpand+ USB-C Hub *Wireless Interface:* Intel Alder Lake-P CNVi (802.11ax)
Router	Vodafone Power Station Wi-Fi 6 *Ethernet Ports:* 4 × 1 GbE ports *Wi-Fi:* Dual-band 802.11ax (2.4 GHz / 5 GHz)
Cables	CAT.5E (up to 1 Gbps)

*The authors collaborated closely in developing this project.

This hardware setup allows us to compare Ethernet versus Wi-Fi performance under a consistent router and cabling environment. In the next section, we detail the evaluation scenarios and the measurement methodology.

3.2 Evaluation Scenarios

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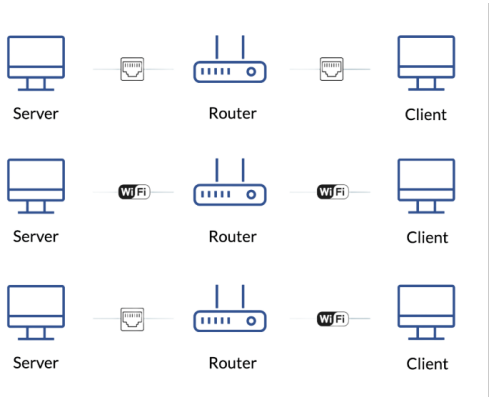

Figure 1: Test cases setup for the experiments.

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4 ANALYSIS AND FINDINGS

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4.1 TCP Performance

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4.2 UDP Performance

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5 CONCLUSION

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A APPENDIX

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