U. PORTO

FEUP **FACULDADE DE ENGENHARIA**
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Data Link Protocol

Computer Networks
Bachelors in Informatics and Computing Engineering

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Summary

This report will cover the first work proposed for the Computer Networks Curricular Unit, with the objective of creating a small application that could transfer data through two computers asynchronously, through a serial port.

The application is capable of transferring files whilst mainting their integrity, and detect errors in transmission, resolving them if possible.

Introduction

This report is the result of an examination to the practical component, which was the development of a data transfer protocol. A serial port was used to transfer the files in an asynchronous fashion.

The report is organized as follows:

1. Architecture- Functional blocks and interfaces

2. Code Structure - APIs, main code structures and their relation with the architecture

3. Main use cases - Identification and Call Stack Sequence

4. Data link Protocol - Main functional aspects and implementation strategy

5. Application Protocol - Main functional aspects and implementation strategy

6. Validation - Description of the tests conducted

7. Efficiency - Statistical characterization of efficiency, against a Stop&Wait protocol

8. Conclusion - Summary of the above descriptions, reflection on the learning objectives

1   Architecture

The application consists of two main layers, one to interact with the file to be sent and another to interact with the hardware. They are the Application Layer, and the Data-Link Layer, and they are detailed below.

1.1 Application Layer

This layer can be found in the **rcom-ftp.c** file, and it encompasses everything related to interaction with the files, be it opening, closing, reading and writing to and from it. Besides that, this is the layer through which the user interacts with the application.

1.2 Data-Link Layer

This layer can be found in the **ll.c** file and it is responsible for ensuring a smooth data transmission over the hardware, including opening, closing, writing and reading from the serial port, with the help of the auxiliary functions present in **config.c**, **read.c**, **send.c**, **state.c** and **utils.c**

2 Code Structure

3 Main use cases

4 The Data link Layer

5 The Application Layer

6 Validation

7 Efficiency

8 Conclusion