Course Project 2018

1 Instructions

1. Each student is required to attempt the problem stated below and to provide an *original analysis and synthesis* of the solution.
2. The Assessment Criteria are given in Expected Outcomes below.
3. The response to the problem must be written as a technical report in having appropriate structure, style and language. The length of the reports should not exceed eight pages of text, excluding diagrams and appendices.
4. The report must be submitted not later than 07:50 on Thursday 19 July 2018 as a physical copy inserted into the red tender box outside the School's Reception Area.
5. m-files must be printed in the report and also submitted along with the electronic copy of the report as e-mail attachments by the same time.
6. Any m-files that you write must be named *mmnxxyy.m*, where *yy* are your initials and *xx* are two or more characters that can be chosen by you if you submit more than one file.

2 Expected Outcomes

This project is designed in a way that the student can demonstrate innovative, theoretical and computational teletraffic skills or both where one could be stronger than the other. Therefore, each student must submit one individual report and associated programs. Approaches which lie mainly on theoretical or mainly on computational methods are equally acceptable.

3 The Problem

A number of years ago, before the rapid growth and widespread penetration of wireless networks, a proposal was made for a local loop solution intended for rural areas.This is described in the accompanying paper by Miklos. The techno-economic case was made in an earlier paper by Cartwright. One of the aims was to reduce the incentive for copper cable theft by reducing the volume of copper relative to a conventional copper loop system.

Miklos analyses the capacity of the system under normal and fault conditions. The capacity of the system could be increased by using packet speech, which would also allow data communications. Also, digital subscriber loop transmission speeds are considerably higher than the 2 MBit/s envisaged in the original proposal.

This is an open-ended project where the student can build on the concepts of the original papers to propose a minimum "copper" solution for a particular situation, for example building wiring, telephones and data in a suburb, or low cost telephony and data in an informal settlement.

Reasonable assumptions should be made about the protocols and technologies used and the focus of the project must fall on a system design that maximises the traffic carried per copper pair.