

# COMP3310/6331 Assignment 1 – The Last Mile

## Intro:

- This assignment is worth 10% of the final mark
- It is due by 17:00 Mon 19 March AEDT
- Late submissions will not be accepted, except in special circumstances
  - Extensions must be requested well before the due date, via the course convenor, with appropriate evidence.

*You are encouraged to research widely, then interpret and present your findings.*

## Assignment 1

*For the three brief questions Q1-Q3, each answer should be about 0.5-1 page long.*

Q1: Why is the Last Mile an important issue in Communication Networking?

Q2: What are the main, typical, options for delivering Last Mile networks in Australia?

Q3: Ignoring costs, what are the inherent (physical) limitations on data-rates across typical Last Mile networks?

*The above answers are input to the following design challenge. Your report for Q4 should be about 1200 words long and include appropriate diagrams and tables.*

Q4. Home broadband can be delivered through a range of cabled and wireless methods, each with their own costs, limitations and benefits. For this part of the assignment you need to provide a brief report for a rural community network organisation. It wants to build a shared network for 900 farms, across their 30x30km square region, through a common infrastructure – i.e. everyone gets the same connection, if not the same performance. The minimum requirement is that every farm gets 50Mb/s down, though of course anything better is welcome. Assume a uniform grid-layout of homes and roads across the area, and that every home has a working phone landline (POTS) from one of the many evenly-distributed nearby (4km away or less) exchanges. There's also 4G mobile phone coverage across the region.

Contrast the various cable approaches and compare them to some reasonable off-the-shelf wireless options. Your analysis should include expected downstream/upstream performance, any limitations, as well as describing the capital and operating cost concerns for the whole system.

Explain what you would recommend, and why. How does it change if the price for copper pairs (per km) is ten times higher than fibre pairs? Or the other way round? Or if they are equal? Highlight any assumptions or simplifications you need to make. It's only a first report for the organisation, they'll need to go get more data based on your advice, and quotes for the actual network elements.

Note, there is no single 'right' answer, and without pricing it is perhaps hard to define the 'optimal' answer. The aim is to analyse the problem, develop potential solutions, and make an argument as to which options lead to the best outcomes.

*For all questions, cite all your sources appropriately and be clear where you are quoting and/or paraphrasing your sources.*