
The Elusive Sweven of Successful, Swasivious Schooling of Subnetting

Mark Caukill

Nelson Marlborough Institute of
Technology
mark.caukill@nmit.ac.nz

Abstract

The title of this poster essentially means 'the elusive dream of successful, persuasive teaching of subnetting' and has been created with the intention of presenting the approaches used over the past years to teach subnetting, and ask for feedback and suggestions from other teaching practitioners. It seeks to improve the process and methods of teaching and learning this topic, such that the end result is better student understanding.

Keywords

subnetting, learning, tutorial, fun, Kolb, ideas

Introduction

Internet Protocol (IP) subnetting is a fundamental skill set for networking. It is the practice of taking a network address range and dividing it up into smaller (sub) networks which allows for hierarchical structuring, easier management and security of a network. Subnetting and troubleshooting of subnet problems is a significant learning challenge for students.

Findings

Within the Bachelor of Technology degree at NMIT, subnetting is taught in the second year Net200: Computer Networking course. The author, an ITP

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lecturer of nearly ten years, has tried many and varied approaches to teaching the esoteric subject of subnetting. To date, experience has shown that many 'infrastructure' streamed students successfully graduate without fully understanding the topic, nor being functionally able to subnet. This is not a short-term tragedy as subnetting calculators are typically used to set up subnets for corporate networks, but what may be a hindrance for the graduate in the long run, is that their lack of subnetting skills and understanding may hamper their post-degree troubleshooting capacity.

Summative subnetting results (a small part of overall testing) over 2009 & 2010 show an unsatisfactory 26% and 47% pass rate respectively (albeit not statistically meaningful). The increase from 2009 may or may not be significant, but as new activities were used in class in the first semester of 2010, the author is hopeful!

Approaches

The various approaches to teaching subnetting that have been applied over several years of teaching are listed below. These approaches have ranged from Kolb's learning cycle 'Reflective Observation' to 'Concrete Experience' in order that "every individual problem solver performs best by tracing the entire cycle him- or herself." (Kamis & Topi, 2007). Also, as stated in Atkins & Caukill, *Serious Fun and Serious Learning* (2009) "it seems intuitive that creating fun and possibly game-like interactive situations and artefacts is a sensible way to provide authentic learning for our students." Specific tactics have included:

- Chalk and talk, with practice based, interactive tutorials
- Analogies (postal, geographic, etc)

- Summative tests (including 24 hour preparation)
- Simple network simulations using NetSimK
- Practical implementations (summative projects)
- Food: black/red/green liquorices, pink/white marshmallows, multicoloured M&M's
- Contests with rewards
- Second Life project
- Practice outside on pavement using chalk (chalk and walk? ;-) (2010)
- Formative online quizzes - do and redo (2010)
- Student authored "Xtreeeme Networking!!!!1~" subnetting game (2010)

Conclusion

Although the above activities are deemed helpful for learning subnetting, and the student feedback about them has been positive, the suboptimal results speak for themselves. Further work must (and will) be done to improve future outcomes.

References and Citations

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