Coursework commentaries 2015–16

CO2222 Data communications and enterprise networking

Coursework assignment 2

General remarks

This was the second of two assignments for this course. The aim of the assignment was to provide the opportunity for students to develop their skills through the application of knowledge gained in the taught course to the solution of a real-world problem. It comprised three tasks, centred around the design of a university campus network.

There was no 'correct' solution, but there were several basic design requirements which had to be met in order to provide a working network. One important piece of information included in the preamble, which should have been used as the basis of how to justify the designs being proposed, was the requirement for each user to be provided with a nominal data rate of 10Mbps. Each floor thus required a basic capacity of 10 x 100 = 1Gbps and the backbone, correspondingly, required a capacity of 10Gbps. Many students made no reference to this at all and simply proposed generic 'text book' type solutions, rather than a network designed to meet the given specification.

Comments on specific questions

Question 1

Task 1 asked students to suggest two different ways in which the LAN on each floor of the building could be implemented. The obvious choice here was to use a hub and switch approach, with a 1Gbps switch at its core. Other solutions could have been FDDI or ATM-based LANs. Many students proposed a wireless LAN solution, but did so without any consideration of the required bandwidth. A wireless solution would be possible, but would require multiple wireless hubs using different frequency bands to accommodate all 100 users.

Question 2

Task 2 focussed on the backbone, where three different possible solutions were required. The choices here were the same as for the LANs, but that they be capable of operating at 10Gbps. A collapsed 10Gbps Ethernet solution is probably the optimum choice in terms of the criteria specified.

Question 3

Task 3 involved a WAN network design problem, not in terms of actual design, but the identification of four important criteria on the basis of which to evaluate competing solutions and companies that might bid for the work. Students were also asked to identify two likely contenders for the contract in their area, and to select a preferred supplier based on their offerings. A good solution identified two companies by name,

together with a brief description of the type of solution that each would be likely to offer, as well as some discussion on which was preferred when judged against the four criteria specified. The four standard criteria from the subject guide were expected; namely, Functionality, Performance, Reliability and Cost; however, others were also acceptable. Similarly, local telecommunications providers were expected to be the companies identified as the best placed to provide the required network.

Finally, a brief conclusion summarising the main features of the recommended design was required, along with a good solution including an explanation and/or justification of why the combination of features had been selected.