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|  | 3413ICT Network Security  School of Information & Communication Technology  Semester 1, 2014 |

**Assignment 2**

**(Weighting 10%)**

**Assignment Due: 23 May, Friday, 16:00 Hrs**

***Analysis of Effect of Secure Operations on the Performance of Medium-Scaled Wide Area Network Using OPNET***

1. **Problem Description**

In the assignment 1, we designed a technical security plan for the medium-scaled Wide Area Network owned by a Motel Chain. The CEO of the Motel Chain wants thorough analysis of the effect of e*ncryption* and c*ompression* operations on the performance of the network.

You are required to build a simulator, generate results and prepare a report describing analysis and your recommendations to the CEO.

1. **Requirements for the Simulator**
2. The two servers, namely, database and web servers are located at the Brisbane headquarters.
3. The Gold Coast LAN has two segments, namely, *official* (1 router and 5 workstations) and *client* (1 router and 10 mobile devices).
4. The *official* segment in the Gold Coast LAN can access all data including web services and database access.
5. The *client* segment, however, only has access to the web services.
6. The communication between *official* segment in the Gold Coast office and the *management* segment of the headquarters LAN should be compressed and encrypted.
7. The communication between *client* segment in the Gold Coast office and the *management* segment of the headquarters LAN should be compressed.
8. The simulator should include the following scenarios for comparison purpose:
   * Scenario 1: No firewall, VPN, encryption, and compression is employed, that is, a network without any protection.
   * Scenario 2: Only firewall is implemented between two branches.
   * Scenario 3: Employing firewall(s), VPN(s), encryption, and compression operations to meet the requirements (a) – (f) given above.
9. **Deliverables**

**Demonstration:** On Tuesday, 3rd June 2014 (Week 13) each student will be required to present findings of his/her work in 3 minute’s presentation and there will be a one minute Q&A session after each presentation.

**Report:** Each student must submit, a report comprising of following components.

1. A summary of the addressed topic and the objectives of the project.
2. Procedure of implementing the simulator, including the steps of creating and configuring the scenarios.
3. Results obtained throughout the simulation.
4. Analysis of the simulation results, a comparison of the results between scenarios, and a comparison of the simulation results with the theoretical expectations.
5. How does the implementation of security techniques affect the network performance?
6. A conclusion that includes your recommendations to the CEO of the Motel Chain.