

FIT5027
Virtual private network

Unit Guide

Semester 1, 2012

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

Last updated: 17 Feb 2012

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FIT5027 Virtual private network - Semester 1, 2012

Layered structure of networks, security threats in an open network environment, and basic security. Detailed exposition of major tools and protocols used in VPNs, including firewalls, IPSec, Internet Security Association and Key Management Protocol (ISAKMP), Internet Key Exchange (IKE), Point-to-Point Protocol (PPP) and Point-to-Point Tunnelling Protocol (PPTP), Layer 2 Tunnelling Protocol (L2TP), Terminal Access Control Access Control System (TACACS), Secure Sockets Layer (SSL), and SOCKS. Exposition of principles and methodologies for the design and implementation of Intranets and Extranets using VPNs.

Mode of Delivery

Caulfield (Evening)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

- Two-hour lecture and
- two-hour tutorial (or laboratory) requiring advance preparation;
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- You will need to allocate up to 5 hours per week in some weeks, for use of a computer, including time for group meetings and project work deliberations.

Unit Relationships

Prohibitions

CPE5006

Chief Examiner

Dr Jefferson Tan

Campus Lecturer

Caulfield

Dr Abdul Malik Khan

Consultation hours: TBA on unit website

Tutors

Caulfield

Dr Abdul Malik Khan

Consultation hours: TBA on unit website

Academic Overview

Outcomes

At the completion of this unit students will:

- develop a detailed knowledge and understanding of all major protocols used for VPN;
- detailed knowledge and understanding of VPN architectures including interaction with firewalls
- develop an understanding of major issues in implementing the protocols;
- have the knowledge and skills to objectively compare and contrast various VPN protocols (eg. L2TP with IPSec and the platform specific variations);
- have the knowledge and skills to enable them to design and implement standard and non-standard VPNs.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

Assessment Summary

Assignments: 60%; Labwork and Test: 40%

Assessment Task	Value	Due Date
Assignment 1	20%	Friday 20 April 2012, 12pm (teaching week 07)
Assignment 2	40%	Demonstrations during the Week 12 tutorials, Report due Week 14 (TBA)
Individual Hands-On Tutorial (Part-A) Test	20%	During the Week 11 tutorials
Individual Tutorial Sheet (Part-B) Theory	20%	During the Week 12 tutorials

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Feedback

Our feedback to You

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Previous Student Evaluations of this unit

There are no changes to the Unit guide. Feedback from previous students evaluation has been very positive and the unit is very well balanced.

If you wish to view how previous students rated this unit, please go to

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Required Resources

Please check with your lecturer before purchasing any Required Resources. Prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

The standard operating environment provided in FIT computer labs is considered adequate for most purposes. However, most of the tutorial exercises require the use of an open source Linux environment, which is provided in the assigned FIT computer laboratory.

Software may be:

- downloaded from the resources page on the unit web site
- or purchased at academic price at good software retailers

Unit Schedule

Week	Activities	Assessment
0	Unit introduction on the website (No Lecture)	No formal assessment or activities are undertaken in week 0
1	Unit introduction to VPNs (Tutorials start in Week 1 with Lab Introduction: VMWare/Knoppix VM's)	
2	Networking concepts	
3	Encryption	
4	Authentication and Authorisation	
5	Key Management & CA	
6	Building simple VPNs	
7	VPN Protocols I	Assignment 1 due on Friday 20 April 2012, 12pm
8	VPN Protocols II	
9	Building and IPSec VPN	
10	VPN with Windows	
11	Non standard protocols & Plenary session	Individual Hands-On Tutorial (Part-A) Test
12	VPN Project discussion - A2 Theoretical work	Individual Tutorial Sheet (Part-B) Theory submission. Assignment 2 Demonstrations.
	SWOT VAC	No formal assessment is undertaken SWOT VAC. Assignment 2 Report due Week 14 (TBA)
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

([http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu](http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hurdles))

Assessment Tasks

Participation

• Assessment task 1

Title:

Assignment 1

Description:

This is a theoretical assignment requiring research into selected topic relating to the concepts covered in the lectures. It is done individually by the students.

Weighting:

20%

Criteria for assessment:

This assignment tests the students' ability to build upon the concepts learnt in the lectures, by independently researching the specified topics, and reporting upon these clearly and concisely, in their written reports. This requires:

1. Correctness and understanding - there may be more than one "right" answer in many cases. We will look for answers that reflect understanding of the underlying principles and theories.
2. Completeness - that you have answered all parts of each question.
3. Presentation - that you have presented your answers in a suitably formatted report style.
4. Use of evidence and argument - you are able to explain your position by using logical argument drawing on the theory presented in the unit.

Due date:

Friday 20 April 2012, 12pm (teaching week 07)

• Assessment task 2

Title:

Assignment 2

Description:

This assignment is completed in groups of up to five students. The students are provided with a real life like VPN design case. They demonstrate the specified aspects of this project in the lab, and later submit a written report detailing the overall design of the project.

This assignment tests the practical skills learnt in the tutorial sessions by students developing practical aspects of the VPN, and demonstrating these aspects in the last week of the semester. The theoretical component of this assignment tests the students' overall understanding, of the unit, through an overall VPN design based on a realistic case study.

Weighting:

40%

Criteria for assessment:

Student demonstrations will be assessed on the basis of competence and achievements. The written report will be assessed on the basis of correctness and understanding, completeness, presentation and use of evidence and argument.

The assessment criteria takes into account (1) the overall work load of the group and (2) any variations in levels of individual contribution when allocating marks to each group member.

Due date:

Demonstrations during the Week 12 tutorials, Report due Week 14 (TBA)

• **Assessment task 3**

Title:

Individual Hands-On Tutorial (Part-A) Test

Description:

The theoretical aspects covered in the lectures are practically undertaken in the tutorial sessions by the students for this assessment.

This assessment comprises the following.

- ◆ demonstration of hands-on skills acquired in the labs relating to the VPN developments, including related skills in areas of system management and network administration.

Weighting:

20%

Criteria for assessment:

Tutorial sheets are intended to be journals as well as answer sheets, where students should show the details of how they worked on the tutorial tasks. These sheets will therefore be assessed on the basis of completeness and correctness.

- ◆ Assessment marks will be based on ability to demonstrate hands-on skills acquired in the labs.
Portions will be based on correct answers to questions pertaining to tutorial materials.
- ◆ The assessment is in the form of test conducted in Week-11 during the tutorials.

Due date:

During the Week 11 tutorials

• **Assessment task 4**

Title:

Individual Tutorial Sheet (Part-B) Theory

Description:

Students will note the details of their work in tutorial work sheets for every tutorial, and all sheets will be submitted in Week 12.

Weighting:

20%

Criteria for assessment:

Tutorial sheets are intended to be journals as well as answer sheets, where students should show the details of how they worked on the tutorial tasks. These sheets will therefore be assessed on the basis of completeness and correctness.

Assessment Requirements

Assessment of Tutorial Sheet (Part-B Theory) is based on the VPN Theory covered in lecture material through multiple choice questions. This is in the form of tutorial sheets (Part-B Theory) due in Week 12 is a collection of tutorial work notes across the twelve weeks.

Due date:

During the Week 12 tutorials

Examinations

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the VLE site for this unit, which you can access via links in the my.monash portal.

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

<http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>.

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Resubmission of assignments

Resubmission of assignments and tutorial work will not be allowed.

Referencing requirements

Referencing requirements will be provided during lectures.

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

<http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html>)
- Grading Scale
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>)
- Discipline: Student Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>)
- Academic Calendar and Semesters (<http://www.monash.edu.au/students/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);
and
- Academic and Administrative Complaints and Grievances Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html>)
- Codes of Practice for Teaching and Learning
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teaching-and-learning.html>)

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at www.monash.edu.au/students. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://www.lib.monash.edu.au> or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: <http://monash.edu/equity-diversity/disability/index.html>;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway

Reading list

Greg Holden. *Guide to Firewalls and Network Security Intrusion Detection and VPNs*. THOMSON ISBN 0619130393

Greg Holden. *Guide to Network Defense and Counter Measures*. THOMSON ISBN 0619131241

Thaddeus Fortenberry. *Windows 2000 Virtual Private Networking*. 1st Ed. Que (2000) ISBN 1578702461

Meeta Gupta. *Building a Virtual Private Network*. 1st Ed. Premier Press (2002) ISBN 1931841810