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**FIT5027 Virtual private network - Semester 1, 2010**

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Introduction

Welcome to FIT5027 (previously coded as CPE5006), Virtual Private Networks for semester 1, 2010. This is a 6 point Masters level unit. The unit has been designed to provide students with an in-depth understanding of virtual private networking from a practical perspective. The unit provides opportunities for students with diverse backgrounds to attain a high level of understanding in the design and management of secure networks. The students attain practical skills in the use of the underlying technologies and protocols relating to securing networks and related system administration activities. The unit is assessed by coursework.

Unit synopsis

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.

Learning 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.

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
Teaching and learning method

Teaching approach

The lecture stream will present the implementation details and design principles of VPN protocols as well as other relevant networking protocols. It will also show students how to build VPNs.

The tutorial sessions will reinforce the concepts learned during the lectures through the hands-on work and completion of the exercises relating to the theory covered in the lectures.

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system: http://allocate.its.monash.edu.au/

Unit Schedule

<table>
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<th>Week</th>
<th>Date*</th>
<th>Topic</th>
<th>Key dates</th>
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<tr>
<td>1</td>
<td>01/03/10</td>
<td>Unit introduction to VPNs</td>
<td></td>
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<td>2</td>
<td>08/03/10</td>
<td>Networking concepts</td>
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<td>3</td>
<td>15/03/10</td>
<td>Encryption</td>
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<td>4</td>
<td>22/03/10</td>
<td>Authentication and Authorisation</td>
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<td>5</td>
<td>29/03/10</td>
<td>Key Management &amp; CA</td>
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<td>Mid semester break</td>
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<td>6</td>
<td>12/04/10</td>
<td>Building simple VPNs</td>
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<td>7</td>
<td>19/04/10</td>
<td>VPN Protocols I</td>
<td>Assignment 1</td>
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<td>8</td>
<td>26/04/10</td>
<td>VPN Protocols II</td>
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<td>9</td>
<td>03/05/10</td>
<td>Building and IPSec VPN</td>
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<td>10</td>
<td>10/05/10</td>
<td>VPN with Windows</td>
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<td>11</td>
<td>17/05/10</td>
<td>Non standard protocols &amp; Plenary session</td>
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<td>12</td>
<td>24/05/10</td>
<td>(No Lecture) VPN Project - A2 Theoretical work</td>
<td>Tutorial Test</td>
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<td>13</td>
<td>31/05/10</td>
<td>(No Lecture) VPN Project - A2 Theoretical work</td>
<td>Assignment 2 (presentation and submission)</td>
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*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.
Improvements to this unit

Student feedback will be sought during the Week 10 lecture with a Monquest survey.
Unit Resources

Prescribed text(s) and readings


Text books are available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

Recommended text(s) and readings


Required software and/or hardware

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
- purchased at academic price at good software retailers

Equipment and consumables required or provided

The students on-campus may use the facilities available in the assigned computing labs. Use of personal laptops is permitted in the lab and during the demonstrations. However no formal support is available for personal laptops.

Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook.

You will need to allocate up to 8 hours per week for private study including use of a computer for eMail and newsgroups/discussion groups.
Study resources

Study resources we will provide for your study are:

The MUSO web site contains the link to the unit's outline, lecture slides, weekly tutorial exercises, assignment specifications, and supplementary resource material and is be available to registered students. Copies of all handouts and most other resource material will generally be made available via the web. The password required to access the materials will be given to you in the first lecture. Students may download copies of lecture slides and tutorial exercises from the web pages. Material may be placed in the web pages without being distributed in class. A general discussion group is available in MUSO for this unit.
Assessment

Overview

Assignments: 60%; Labwork and Test: 40%

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

As this unit does not include an end of semester exam, to pass the unit the student must:

- gain at least 40% of the assessable tutorial and test component: ie exercises and tests performed under Laboratory conditions, taken as a whole
- gain at least 40% of the assignment component: ie the assignments and any other other assessment tasks (such as presentations) taken as a whole
- achieve at least 50% of the total marks for the unit

If a student does not achieve 40% or more in the assignment component or the assessable tutorial and test component, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:
http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

- Assignment task 1

  Title: Assignment 1
  Description: This is a theoretical assignment requiring research into two or three sub-topic relating to the concepts covered in the first three lectures. It is done individually by the students.
  Weighting: 20%
  Due date:
• Assignment 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.
Weighting: 40%
Due date: Fri 04 June (teaching week 13)

• Assignment task 3

Title: Tutorial assessment
Description: The theoretical aspects covered in the lectures are practically undertaken in the tutorial sessions by the students for this assessment.
Weighting: 40%
Due date: Practical demonstrations in week 12 and the tutorial sheet submissions at the end of the semester.

Due dates and extensions

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html
Late assignment

Assignments received after the due date will be subject to a penalty of 5% per day late. Assignments received more than one week after the due date will not normally be accepted.

Return dates

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

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams