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<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of Delivery</td>
<td>1</td>
</tr>
<tr>
<td>Contact Hours</td>
<td>1</td>
</tr>
<tr>
<td>Workload</td>
<td>1</td>
</tr>
<tr>
<td>Unit Relationships</td>
<td>1</td>
</tr>
<tr>
<td>Prohibitions</td>
<td>1</td>
</tr>
<tr>
<td>Chief Examiner</td>
<td>1</td>
</tr>
<tr>
<td>Campus Lecturer</td>
<td>1</td>
</tr>
<tr>
<td>Caulfield</td>
<td>1</td>
</tr>
<tr>
<td>Tutors</td>
<td>2</td>
</tr>
<tr>
<td>Caulfield</td>
<td>2</td>
</tr>
<tr>
<td>Learning Objectives</td>
<td>2</td>
</tr>
<tr>
<td>Graduate Attributes</td>
<td>2</td>
</tr>
<tr>
<td>Assessment Summary</td>
<td>2</td>
</tr>
<tr>
<td>Teaching Approach</td>
<td>3</td>
</tr>
<tr>
<td>Feedback</td>
<td>3</td>
</tr>
<tr>
<td>Our feedback to You</td>
<td>3</td>
</tr>
<tr>
<td>Your feedback to Us</td>
<td>3</td>
</tr>
<tr>
<td>Previous Student Evaluations of this unit</td>
<td>3</td>
</tr>
<tr>
<td>Required Resources</td>
<td>3</td>
</tr>
<tr>
<td>Unit Schedule</td>
<td>4</td>
</tr>
<tr>
<td>Assessment Policy</td>
<td>4</td>
</tr>
<tr>
<td>Assessment Tasks</td>
<td>5</td>
</tr>
<tr>
<td>Participation</td>
<td>5</td>
</tr>
<tr>
<td>Examinations</td>
<td>6</td>
</tr>
<tr>
<td>Assignment submission</td>
<td>6</td>
</tr>
<tr>
<td>Extensions and penalties</td>
<td>6</td>
</tr>
<tr>
<td>Returning assignments</td>
<td>6</td>
</tr>
<tr>
<td>Resubmission of assignments</td>
<td>6</td>
</tr>
<tr>
<td>Referencing requirements</td>
<td>7</td>
</tr>
<tr>
<td>Policies</td>
<td>7</td>
</tr>
<tr>
<td>Student services</td>
<td>7</td>
</tr>
</tbody>
</table>
FIT5027 Virtual private network - Semester 1, 2011

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 (Day)

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

Asad Khan

Campus Lecturer

Caulfield

Asad Khan

Contact hours: Thursday 11am-2pm by appointment
Tutors

Caulfield

Dr Abdul Malik Khan

Contact hours: TBA on unit website

Ms Ladan Massumi

Contact hours: TBA on unit website

Learning Objectives

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

2. 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%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>20%</td>
<td>Friday 15 April 2011, 12PM (teaching week 07)</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>40%</td>
<td>Friday 27 May 2011, 12PM (teaching week 12)</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td></td>
</tr>
</tbody>
</table>
Teaching Approach

Lecture and tutorials or problem classes

The approach to teaching and learning include a weekly two-hour lecture and a two-hour (tutorial/laboratory). Additionally, each student should spend,

- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- allocate up to 5 hours per week in some weeks, for use of a computer, including time for newsgroups/discussion groups.

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.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to https://emuapps.monash.edu.au/unitevaluations/index.jsp

Required Resources

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:
Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date*</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21/02/11</td>
<td>Unit introduction on the website (No Lecture)</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>28/02/11</td>
<td>Unit introduction to VPNs (no lab or tute)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>07/03/11</td>
<td>Networking concepts</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>14/03/11</td>
<td>Encryption</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>21/03/11</td>
<td>Authentication and Authorisation</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>28/03/11</td>
<td>Key Management &amp; CA</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>04/04/11</td>
<td>Building simple VPNs</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>11/04/11</td>
<td>VPN Protocols I</td>
<td>Assignment 1 due on Friday 15 April 2011, 12PM</td>
</tr>
<tr>
<td>8</td>
<td>18/04/11</td>
<td>VPN Protocols II</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Mid semester break</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>02/05/11</td>
<td>Building and IPSec VPN</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>09/05/11</td>
<td>VPN with Windows</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>16/05/11</td>
<td>Non standard protocols &amp; Plenary session</td>
<td>Lab Assessment</td>
</tr>
<tr>
<td>12</td>
<td>23/05/11</td>
<td>(No Lecture) VPN Project - A2 Theoretical work</td>
<td>Assignment 2 in-lab demonstrations during week 12. Assignment 2 due on Friday 27 May 2011, 12PM</td>
</tr>
<tr>
<td></td>
<td>30/05/11</td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken SWOT VAC</td>
</tr>
</tbody>
</table>

*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.

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.
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. Presentation - that you have presented your answers in a suitably formatted report style.
3. 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 15 April 2011, 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.

Weighting:
40%

Criteria for assessment:
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.

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:
Friday 27 May 2011, 12PM (teaching week 12)
• Assessment 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%

Criteria for 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.
♦ Assessment of the lecture material through multiple choice questions.

Due date:
Practical demonstrations in week 12 and the tutorial sheet submissions at the end of the semester.

Examinations

Assignment submission

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.

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:

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 the lecture.

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)
- 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/)

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. 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. Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis

- Website: http://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html
- Telephone: 03 9905 5704 to book an appointment with a DLO
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

Reading List

