MONASH University

FIT4017
Network management

Unit guide

Semester 2, 2008

Last updated : 27 Jun 2008

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Unit leader :

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Lecturer(s) :

Clayton

- Carlo Kopp

Introduction

Welcome to FIT4017 Network Managment for semester 2, 2007. This 6 point unit is an elective unit for the Master of Digital Communications and Master of Computer Science degrees. The unit has been designed to provide you with an understanding of network strategy development; network design principals; Telecom services; network performance; network topologies; network implementation; case studies; traffic models; limitations of traffic models; network management protocols; reliability in management of networks; network management protocols.

Unit synopsis

Network strategy development; network design principals; Telecom services; network performance; network topologies; network implementation; case studies; traffic models; limitations of traffic models; network management protocols

Learning outcomes

Knowledge and Understanding

On successful completion the student will be able to understand:

C1. Network strategy development

C2. network design principles

C3. network performance

C4. network topologies

C5. network implementation

In addition, the student will be able to:

C6. analyse the requirements of a networking systems

C7. evaluate the advantages and disadvantages of particular networking systems and technologies in specific situations

Attitudes, Values and Beliefs

Upon completion of this unit, students will have an appreciation of

A1. the importance of systematic design in networks

A2. the importance of management protocols and philosophy in networks

Practical Skills

Upon completion of this unit, students will have the ability to

P1. perform basic design tasks for a network

P2. devise a management model and system for a network, using established protocols

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Relationships, Communication and TeamWork

Upon completion the student have gained experience

S1. communicating on issues in design and management of networks

S2. appreciate the organisational and social impact of poor design and management in networks

Workload

For on campus students, workload commitments are:

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

Unit relationships

Prerequisites

Basic familiarity with telecommunications technology is expected and assumed in the course materials and teaching.

Students are expected to be familiar with terms and concepts such as LAN, WAN, Ethernet, Half Duplex, Full Duplex, analog, digital, synchronous and asynchronous communications, bps and such like.

Relationships

FIT4017 is an elective unit in the Master of Digital Communications (MDigComms) and Master of Computer Science (MCS) degrees.

There are no prerequisites or corequisites. Please refer to course description for constraints which apply relative to other units.

Basic familiarity with telecommunications technology is expected and assumed in the course materials and teaching. If you are uncertain about your prerequisite knowledge, please consult the lecturer at the beginning of semester for advice on additional reading.

Students are expected to be familiar with terms and concepts such as LAN, WAN, Ethernet, Half Duplex, Full Duplex, analog, digital, synchronous and asynchronous communications, bps and such like.

Continuous improvement

Monash is committed to ‘Excellence in education' and strives for the highest possible quality in teaching and learning. To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. Two of the formal ways that you are invited to provide feedback are through Unit Evaluations and through Monquest Teaching Evaluations.

One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. It is Monash policy for every unit offered to be evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

Student Evaluations

The Faculty of IT administers the Unit Evaluation surveys online through the my.monash portal, although for some smaller classes there may be alternative evaluations conducted in class.

If you wish to view how previous students rated this unit, please go to
http://www.monash.edu.au/unit-evaluation-reports/

Over the past few years the Faculty of Information Technology has made a number of improvements to its courses as a result of unit evaluation feedback. Some of these include systematic analysis and planning of unit improvements, and consistent assignment return guidelines.

Monquest Teaching Evaluation surveys may be used by some of your academic staff this semester. They are administered by the Centre for Higher Education Quality (CHEQ) and may be completed in class with a facilitator or on-line through the my.monash portal. The data provided to lecturers is completely anonymous.
Monquest surveys provide academic staff with evidence of the effectiveness of their teaching and identify areas for improvement. Individual Monquest reports are confidential, however, you can see the summary results of Monquest evaluations for 2006 at http://www.adm.monash.edu.au/cheq/evaluations/monquest/profiles/index.html

Unit staff - contact details

Unit leader

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Teaching and learning method

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

Unit Schedule

Week	Topic	Key dates
1	Introduction and overview; Performance criteria vs user requirements and expectations	
2	Switched vs Packet Network Concepts ; Design Strategies	
3	Queueing Theory Concepts; Impact of Queueing Behaviour on Switched and Packet Networks	
4	Switched Network Topology, Design, Modelling and Performance Concepts	
5	Packet Network Topology, Design, Modelling and Performance Concepts	
6	Packet Network Topology, Design, Modelling and Performance; VoIP, HTTP, other common traffic load types	
7	Mid Semester Test	Mid Semester Test
8	Error Rates and Impact; RF Propagation in Wireless and Cellular Networks	
9	Reliability Theory Concepts; Managing Reliability and Maintainability in Networks	
10	Network Modelling; Network Management Protocols	
11	SNMP Protocol Family	
Mid semester break		
12	Network Security Concepts; Managing Security in Networks	Assignment Due
13	Examination	

Unit Resources

Prescribed text(s) and readings

Stallings, William, Data and Computer Communications (edition 8 published May 2007) ISBN: 0-13-100681-9 Publisher: Prentice Hall. 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

Grover, K.C., Foundations of Business Telecommunications Management Plenum, NY, 1986

Stallings, William, Data and Computer Communications (edition 7 published May 2003) ISBN: 0-13-100681-9 Publisher: Prentice Hall

Tanenbaum, A.S., Computer Networks (2003 edition now available)

Smith, R., Mandani, E.H., Callaghan, J. The Management of Telecommunications Networks, Ellis Horward, 1992

Schartz, M, Computer Communication Network Design and Analysis

Schatt, F., Understanding Network Management: strategies and solutions, Winderest/McGraw Hill 1993 (Cau. 004.6 SCHA)

Required software and/or hardware

There is no software requirement

Equipment and consumables required or provided

Students may use the facilities available in the computing labs. 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 **6** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

The FIT4017 web site on MUSO, where lecture slides, weekly tutorial requirements, assignment specifications, sample solutions and supplementary material will be posted.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to http://www.lib.monash.edu.au. Be sure to obtain a copy of the Library Guide, and if necessary, the instructions for remote access from the library website.

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (http://moodle.monash.edu.au) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: http://my.monash.edu.au

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

For more information, please visit: http://www.monash.edu.au/muso/support/students/downloadables-student.html

You can contact the MUSO Support by: Phone: (+61 3) 9903 1268

For further contact information including operational hours, please visit:
http://www.monash.edu.au/muso/support/students/contact.html

Further information can be obtained from the MUSO support site:
http://www.monash.edu.au/muso/support/index.html

Assessment

Unit assessment policy

Achieve passes in all assessment categories. A 45% hurdle applies to all assessment categories. Grades below the hurdle in any category may result in a fail.

Assignment tasks

- **Assignment Task**

  Title : Assignment

  Description :

  Weighting : 25%

  Criteria for assessment :

  Students must demonstrate good understanding of the material in question and produce a report which is complete, and contains correct results.

  Due date : End Week 12
- **Assignment Task**

  Title : Mid Semester Test

  Description :

  Multiple choice question test duration 2 hrs; closed book.

  Weighting : 25%

  Criteria for assessment :

  Students must correctly answer at least 50% of the questions in the test.

  Due date : N/A

Examinations

- **Examination**

  Weighting : 50%

  Length : 3 hours

  Type (open/closed book) : Closed book

Assignment submission

Assignments will be submitted by electronic submission to Damocles. On-campus Students Submit the assignment to the Damocles site by the specified date, with the appropriate cover sheet correctly filled out and attached. Do not email submissions. The due date is the date by which the submission must be received/the date by which the submission is to be posted.

Assignment coversheets

via the "Student assignment coversheets" (http://infotech.monash.edu.au/resources/student/assignments/) page on the faculty website; NB submission via Damocles plus hard copy, submissions via MUSO will not be accepted.

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. 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 seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Requests for extensions must be made to the unit lecturer at your campus at least two days before the due date. You will be asked to forward original medical certificates in cases of illness, and may be asked to provide other forms of documentation where necessary. A copy of the email or other written communication of an extension must be attached to the assignment submission.

Late assignment

Assignments received after the due date will be subject to a penalty of 10% per day. All assignments must be submitted via Damocles - http://viper.infotech.monash.edu.au/damocles/submit/submissions.sv?subaction=showLogin .

Return dates

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

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at http://www.policy.monash.edu/policy-bank/academic/education/assessment/

We will aim to have assignment results made available to you within TBD after assignment receipt.

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with Student Rights and Responsibilities (http://www.infotech.monash.edu.au/about/committees-groups/facboard/policies/studrights.html) and the Faculty regulations that apply to students detected cheating as these will be applied in all detected cases.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- Disabilities Liaison Unit

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at http://www.monash.edu.au/exams/special-consideration.html. Contact the Faculty's Student Services staff at your campus for further information and advice.