



MONASH University
Information Technology

FIT2018
Network and systems administration

Unit Guide

Semester 1, 2011

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.

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FIT2018 Network and systems administration - Semester 1, 2011

This unit will provide students with fundamentals and theoretical foundations of network and systems administration. In addition, students will acquire practical skills needed to plan, provide and manage networks through laboratory activities and projects.

This unit covers the following topics: Network administration scope, goals, and philosophy; IT system components and network structures; host computer and user management; standards, technology and protocols; managing networked devices; management issues: planning, implementation, fault diagnosis and performance; network documentation; security and administration; provision and management of common network and application services.

Mode of Delivery

- Caulfield (Day)
- Sunway (Day)
- South Africa (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

Students will be expected to spend a total of 12 hours per week during semester on this unit. This will include:

- Lectures: 2 hours per week
- Tutorials/Lab sessions: 2 hours per week per tutorial
- and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

CPE3012, CPE5013, CSE3153, CPE2009, [FIT3149](#)

Prerequisites

One of CPE1007, CPE2002, CSE2318, CSE3318, [FIT1005](#), [FIT1031](#), [FIT2008](#) or equivalent

Chief Examiner

Jefferson Tan

Campus Lecturer

Caulfield

Jefferson Tan

South Africa

Mohan Das

Sunway

Elsa Phung

Learning Objectives

At the completion of this unit students will have -

A knowledge and understanding of:

- the role of a network administrator;
- the configuration and management of network infrastructure protocols used in internets (such as ICMP, DHCP, DNS, LDAP etc);
- host computer and user management;
- network application protocols used by network management systems (such as SNMP, RMON);
- factors involved in and be able to manage the security, reliability and performance of computer networks.

The ability to:

- adopt a problem-solving approach;
- independently research topics and resolve problems associated with network management;
- understand and use a range of hardware and software tools for network and systems administration;
- install, configure and manage network application services such as name, database, mail and web servers;
- act in accordance with best practice, industry standards and professional ethics.

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

Examination (2 hours): 40%; In-semester assessment: 60%

Assessment Task	Value	Due Date
Network Administration Project	30%	Week 12
Tutorial/Lab Assessments	Total of 30% spread across several tutorial/lab assessments.	During tutorials of Week 4 through to Week 9
Examination 1	40%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

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

Lectures will cover theories, standards and practices, which will be reinforced by tutorial/labs.

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
- Test results and feedback
- Solutions to tutes, labs and assignments

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

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

Required Resources

You will need access to the following software:

- A Freeware Unix of some recent flavor, preferably on a virtual machine platform such as VMware
- Web browser for online reading references
- A word processor for writing up assignments, e.g., Microsoft Word or OpenOffice.
- A vector graphics tool for creating diagrams, e.g., Microsoft Powerpoint or OpenOffice.
- software for generating PDF output (Adobe Acrobat file)

PDFCreator and freeware Unix flavors such as Linux or FreeBSD can be downloaded from the Internet. Information on how to download and install them will be made available via the unit website. Note that alternatives for the above may all exist from different sources, e.g., Adobe Acrobat Professional instead of PDFCreator, although the former is a commercial product (and is therefore not free).

VMware Player and Server for Microsoft Windows and Linux may still be free to download but it appears that only a commercial version (VMware Fusion) exists for Mac OS X. Free Linux-based "appliances" can be downloaded from the VMware marketplace. However, Mac OS X does have an underlying UNIX flavor beneath, and may be sufficient in itself. But care must be taken to retain regular backups in case experiments with Unix services go awry.

Using VMs is preferred over installing directly onto your hard disk, as it avoids risks to your hard disk's existing platform and partition table. On the other hand, more adventurous users may wish to try direct installation of Linux as a second boot option, but great care must be taken to prepare backups of all data or Windows images, in case something goes wrong.

Unit Schedule

Week	Date*	Activities	Assessment
0	21/02/11		No formal assessment or activities are undertaken in week 0
1	28/02/11	Introduction to Network Administration	
2	07/03/11	System and Network Components	
3	14/03/11	TCP/IP Networking	
4	21/03/11	TCP/IP Network Administration	Assessment Task 2 commences during tutorials of Week 4 through to Week 9
5	28/03/11	TCP/IP Network Services	
6	04/04/11	Electronic Mail and Users	
7	11/04/11	Network Security	
8	18/04/11	Directory Services and Network Monitoring	
Mid semester break			

9	02/05/11	Switching and Routing	
10	09/05/11	Wide Area Networking	
11	16/05/11	Network Maintenance and Operations	
12	23/05/11	Other Network Matters and Revisions	Assessment Task 1: Network Administration Project: demos during Tutorials and Report due Friday
	30/05/11	SWOT VAC	No formal assessment is undertaken SWOT VAC

*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:

Network Administration Project

Description:

Students in groups of at most three members each will be required to build and demonstrate a small TCP/IP network, configured with a few basic network services. Concise documentation will also be required for submission. Criteria used to assess student work are:

1. The network and its services will be demonstrated to work as intended.
2. Students will be expected to answer questions during the demo. In some cases, students will be asked to reconfigure their systems to some extent.
3. The report documents student work and should indicate a correct understanding of how the network components fit into the whole. The report will constitute about 20% of this project's total marks.

Students will be given time to work on their project during some tutorial hours using lab equipment.

Weighting:

30%

Criteria for assessment:

The assessment criteria will be released with the assignment details.

Due date:

Week 12

• **Assessment task 2**

Title:

Tutorial/Lab Assessments

Description:

During a number of tutorials, students will be assessed as they accomplish what is required for those tutorials. These typically consist of configuration, installation and operational tasks, involving both hardware and software network components. The entire tutorial period may be allotted for the assessment, with tutors on hand to provide reasonable assistance.

Weighting:

Total of 30% spread across several tutorial/lab assessments.

Criteria for assessment:

Individuals will be required to demonstrate correct configuration, installation, analysis, troubleshooting or operation of one or two network components, which would combine both hardware and software. Partially correct executions of what is required will be awarded partial points. Students may be asked to explain their work as part of assessing the correctness of what was accomplished.

Due date:

During tutorials of Week 4 through to Week 9

Remarks:

Students will be allowed to consult whatever references they can find, whether in print or online, but they may not consult other students of this unit on any campus at any time during the assessment.

Examinations

• **Examination 1**

Weighting:

40%

Length:

2 hours

Type (open/closed book):

Closed book

Electronic devices allowed in the exam:

None

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:

<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

Referencing requirements

All references in the project should be identified and properly cited in the project report. Failure to do so may constitute an act of plagiarism if the source material is neither paraphrased sufficiently nor quoted. Additionally clear citation of these references must be given in the text of the report as well as in a separate Bibliography at the end of the report.

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-p>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- 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>)

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

Required reference:

- IT Ethics Handbook : Right and Wrong for IT Professionals
(<http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2327958>)

Other texts recommended:

- Burgess, M., *Principles of Network and System Administration* (2nd Ed), Wiley, 2004.
(<http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2017671>)
- Limonchelli, T. A., Hogan, C. J., Chalup, S. R., *The Practice of System and Network Administration* (2nd Ed), Addison-Wesley, 2007.
(<http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2253326>)
- Nemeth, E., Snyder, G., Hein, T., Whaley, B., *UNIX and Linux System Administration Handbook* (4th ed), Prentice-Hall, 2010.
- Burke, J.R., *Network Management Concepts and Practice: a Hands-on Approach*, Pearson, 2004.
- Subramanian, M., *Network Management: Principles and Practice*, Addison Wesley, 2000.
- Stallings, W., *SNMP, SNMPv2, SNMPv3 and RMON I and II* (3E), Addison Wesley, 1998.
- Stallings, W., *Data and Computer Communications* (7E), Prentice Hall, 2004.
- Hunt, C., *TCP/IP Network Administration* (3E), OReilly, 2002.
- Mikalsen, A. and Borgesen, P., *Local Area Network Management, Design and Security*, John Wiley and Sons, 2002.