# FIT2018
# Network and systems administration

# Unit Guide

# Semester 1, 2014

*Last updated: 20 Feb 2014*

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# FIT2018 Network and systems administration - Semester 1, 2014

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

Malaysia (Day)

## Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Additional requirements (all students):

- A minimum of 8 hours of independent study per week 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

**Dr Nik Nailah Abdullah**

### Campus Lecturer

**Malaysia**

**Dr Nik Nailah Binti Abdullah**

Consultation hours: Monday 9 to 12

# 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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

www.monash.edu.au/about/monash-directions/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

# Previous Student Evaluations of this Unit

Based on previous student feedback this unit is well structured. Minor changes to the Tutorials/Laboratories have been made for this semester.

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

# Academic Overview

## Learning Outcomes

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.

# Unit Schedule

| Week | Activities | Assessment |
|------|------------|------------|
| 0 | | No formal assessment or activities are undertaken in week 0 |
| 1 | Introduction to Network Administration | |
| 2 | System and Network Components | |
| 3 | TCP/IP Networking | |
| 4 | TCP/IP Network Administration | Assessment Task 2 commences during tutorials of Week 4 through to Week 9 |
| 5 | TCP/IP Network Services | |
| 6 | Electronic Mail and Users | |
| 7 | Network Security | |
| 8 | Directory Services and Network Monitoring | |
| 9 | Switching and Routing | |
| 10 | Wide Area Networking | |
| 11 | Network Maintenance and Operations | Assessment Task 1: Project demonstrations during tutorials |
| 12 | Other Network Matters and Revisions | Assessment Task 1: Report due |
| | SWOT VAC | No formal assessment is undertaken in SWOT VAC |
| | 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 learning system.

# Teaching Approach

**Lecture and tutorials or problem classes**

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.
Lectures will cover theory, standards, and ethics, which will be put into practice in a hands-on lab environment.

# Assessment Summary

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

| Assessment Task | Value | Due Date |
|-----------------|-------|----------|
| Network Administration Project | 30% | Week 11 - Presentation; Week 12 - Report |
| Tutorial/Lab Assessments | Total of 30% spread across several tutorial/lab assessments. | During tutorials of Week 4 through to Week 9 |

Unit Schedule

Examination 1            40%                                              To be advised

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurd

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

## Assessment Tasks

## Participation

- **Assessment task 1**

    **Title:**
    Network Administration Project
    **Description:**
    Students in groups of at most four members will be required to build, document, and demonstrate a TCP/IP network, configured with essential network services and additional features. Several base scenarios will be available to choose from as a starting point. Time will be allocated during some tutorials for work on the project using equipment in the labs. Students will be expected to answer questions about their system during the demonstration.
    **Weighting:**
    30%
    **Criteria for assessment:**

    1. The network and its services work as intended: 50% of the project mark
    2. The report documents the system and indicates a correct understanding of how the network components fit into the whole. The report and demonstration are 30% of project mark.
    3. The project management component will constitute the remaining 20% of the project's total marks, and will also be used to assess individual contributions to the project outcome.

    **Due date:**
    Week 11 - Presentation; Week 12 - Report

- **Assessment task 2**

    **Title:**
    Tutorial/Lab Assessments
    **Description:**
    During a number of tutorials, students will be assessed as they accomplish configuration, installation and operational tasks. 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

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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

# Learning resources

# Reading list

- Nemeth, E., Snyder, G., Hein, T., Whaley, B., UNIX and Linux System Administration Handbook (4th Edition), Prentice-Hall, 2010.

- Limonchelli, T. A., Hogan, C. J., Chalup, S. R., The Practice of System and Network Administration (2nd Edition), Addison-Wesley, 2007.
(http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2253326)

- Burgess, M., Principles of Network and System Administration (2nd Edition), Wiley, 2004.
(http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2017671)

- Burke, J.R., Network Management Concepts and Practice: a Hands-on Approach, Pearson, 2004.

- Stallings, W., Data and Computer Communications (7th Edition), Prentice Hall, 2004.

- Hunt, C., TCP/IP Network Administration (3rd Edition), OReilly, 2002.

- Mikalsen, A. and Borgesen, P., Local Area Network Management, Design and Security, John Wiley and Sons, 2002.

- Subramanian, M.. Network Management: Principles and Practice, Addison Wesley, 2000.

- Stallings, W., SNMP, SNMPv2, SNMPv3 and RMON I and II (3rd Edition), Addison Wesley, 1998.

Monash Library Unit Reading List (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Faculty of Information Technology <u>Style Guide</u>

# Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see <u>http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html</u>

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

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Interviews
- Solutions to tutes, labs and assignments

# 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: <u>http://www.monash.edu.au/exams/special-consideration.html</u>

# 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.

Refer to the Library Guides for Citing and Referencing at http://guides.lib.monash.edu/content.php?pid=88267&sid=656564

# Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-pla for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <u>http://www.infotech.monash.edu.au/resources/student/forms/</u>. 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). Please note that it is your responsibility to retain copies of your assessments.

# Online submission

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

# Required Resources

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

You will need access to the following software:

- A virtual machine platform. For compatibility with the labs, use VirtualBox 4.0.14 (https://www.virtualbox.org/wiki/Download_Old_Builds_4_0). You are free to use any combination of virtualisation platform and operating system, but only VirtualBox 4.0.n and the operating system images distributed as part of the unit materials will be directly supported.
- A vector graphics tool for creating diagrams. Dia is recommended: (http://dia-installer.de/) the current Dia release (0.97.2) has been tested successfully on Windows 7, Windows Vista and Windows XP, Linux and Mac OS X.

# Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.

Northcutt, Stephen. (2004). *IT Ethics Handbook : Right and Wrong for IT Professionals*. (http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2327958) Syngress.

# 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: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h
- Assessment in Coursework Programs; http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- 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/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Academic and Administrative Complaints and Grievances Policy; http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h

## Faculty resources and policies

Important student resources including Faculty policies are located at http://intranet.monash.edu.au/infotech/resources/students/

## Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

## Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.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 http://www.monash.edu.au/students. For Malaysia see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

# Monash University Library

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

# Disability Liaison Unit

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://www.monash.edu/equity-diversity/disability/index.html
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at Malaysia
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Malaysia Campus

# Other

**Essential System Administration References:**

http://library.monash.edu.au/vwebv/holdingsInfo?bibId=1898564

Principles of Network and System Administration.
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2017671

TCP/IP Network Administration, 3rd Edition
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=1722783

DNS and BIND
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2908296

LDAP System Administration
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=1898558

Cisco IOS in a Nutshell
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2010030

Wicked Cool Shell Scripts : 101 Scripts for Linux, Mac OS X, and UNIX Systems
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2297376

Cyber Crime Investigator's Field Guide
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2887613

The IT Regulatory and Standards Compliance Handbook
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2699975

The Illustrated Network: how TCP/IP Works in a modern network
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2850250

Other Information

Network Consultants Handbook
http://library.monash.edu.au/vwebv/holdingsInfo?bibId=1797622