



MONASH University
Information Technology

FIT2018
Network and systems administration

Unit Guide

Semester 1, 2015

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FIT2018 Network and systems administration - Semester 1, 2015

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.

See also Unit timetable information

Unit Relationships

Prohibitions

CPE3012, CPE5013, CSE3153, CPE2009, FIT3149

Prerequisites

One of CPE1007, CPE2002, CSE2318, CSE3318, FIT1005, FIT1031, FIT2008 or equivalent

Chief Examiner

Dr Ahmed Elmesiry

Campus Lecturer

Malaysia

Dr Ahmed Elmesiry

Consultation hours: Will be notified at the lecture.

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. New tutorials/laboratories have been introduced and various changes and updates to the previous 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	Assessed tutorial work
3	TCP/IP Networking	
4	TCP/IP Network Administration	Assessed tutorial work
5	TCP/IP Network Services	
6	Electronic Mail and Users	Assessed tutorial work
7	Network Security	
8	Directory Services and Network Monitoring	Assessed tutorial work
9	Switching and Routing	
10	Wide Area Networking	Assessed tutorial work
11	Network Maintenance and Operations	
12	Other Network Matters and Revisions	Project demo and submission of report
	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%	Both the demo and documentation are due during the student's tutorial session in Week 12
Tutorial/Lab Assessments	30%	Tutorials of Weeks 2, 4, 6, 8 and 10
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-hurdles>)

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:

This is a two-part project involving (1) a demo during Week 12 tutorials, and (2) a technical report handed in during the demo. Students will be working in groups of four members at most to demonstrate a small network that includes key network components and services. The technical report accompanying this demo should describe the testbed and demonstrate the student's understanding of the entire infrastructure.

Detailed specifications will be detailed in this unit's Moodle site.

Weighting:

30%

Criteria for assessment:

Hurdle requirements:

Each group must designate equitable responsibilities for each member, who is assessed on the functionality and competent exposition of the component(s) he or she is responsible for during the demo. This assessment incorporates both the proper working of the component as well as the clarity and completeness of the demonstration by the student, which includes answering questions and performing configuration changes as required.

The technical documentation will be assessed as a single piece of work with one grade awarded to the group as a whole. Note that no member of the team may be limited to only working on the documentation. Each team member must bear some burden in the demonstration prototype/testbed.

Awarding of marks will also be affected by any additional challenges freely met by the responsible student, e.g., advanced configuration and/or operation of a particular component.

Due date:

Both the demo and documentation are due during the student's tutorial session in Week 12

Remarks:

Delegation of specific responsibilities within a team should be discussed with the tutor by Week 8, in order to avoid problems of inequitable distribution or unrealistic tasks.

• **Assessment task 2**

Title:

Tutorial/Lab Assessments

Description:

Some tutorials will have assessments in them to test student understanding of concepts as well as competence with practical work. Up to 30 minutes will be devoted to the concept questions in a quiz format, while the remaining 90 minutes will be spent on tutorial work, which will be assessed with the aid of worksheets.

The marking weight for assessed tutorials in Weeks 2, 4, 6 and 8 are each at 5% of the unit marks, but 10% in Week 10.

Weighting:

30%

Criteria for assessment:

Quiz-type questions will be marked on the basis of correct answers. Practical work will be marked on the basis of whether or not the required tasks are completed competently. Partial marks may be awarded for practical work as well as short answer questions in the quizzes.

Due date:

Tutorials of Weeks 2, 4, 6, 8 and 10

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>)

Assessment Requirements

- 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>

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
- Quiz results
- 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: <http://www.monash.edu.au/exams/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

The process and format of referencing in the assignment's report must follow the IEEE style. Guides and tutorials are available for the IEEE Style for IT students in the university library website.

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

Assessment Requirements

coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. 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 electronic submission). 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.

This unit will involve access to Linux virtual machines. Virtualization software (VMware Workstation). VMware Player (Windows and Linux) and VirtualBox are both free and available in the labs. Linux itself is free to download, or you can download prepared Linux virtual machines online, e.g., via VMware marketplace.

Prescribed text(s)

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

Nemeth, Snyder, Hein & Whaley . (07/14/2010). *UNIX and Linux System Administration Handbook*,. (Fourth Edition) Prentice Hall (ISBN: 0131480057).

Technological Requirements

Students must regularly check Moodle for announcements.

Students may bring a laptop or similar to class. Mobile phones should not have audible ring during classes (i.e., they should be on vibrate, off, or not carried).

Recommended Resources

While virtualization software (VMware Workstation) is available in the labs it is strongly recommended that you install it on your own computer as well.

It is also strongly recommended that students bring an external storage device to their tutorial sessions. Even a 4 GB pendrive would be sufficient to hold a sufficiently large Linux VM, although 8 GB or more can come in handy at times.

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

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.h>

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 Community 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:

Principles of Network and System Administration.

<http://search.lib.monash.edu/MON:catau21135946310001751>

TCP/IP Network Administration, 3rd Edition

<http://search.lib.monash.edu/MON:catau51226014940001751>

DNS and BIND

<http://search.lib.monash.edu/MON:catau21200373620001751>

LDAP System Administration

<http://search.lib.monash.edu/MON:catau21139636600001751>

Cisco IOS in a Nutshell

<http://search.lib.monash.edu/MON:catau21129714550001751>

Wicked Cool Shell Scripts : 101 Scripts for Linux, Mac OS X, and UNIX Systems

<http://search.lib.monash.edu/MON:catau21197924260001751>

Cyber Crime Investigator's Field Guide

<http://search.lib.monash.edu/MON:catau21189713390001751>

The IT Regulatory and Standards Compliance Handbook

<http://search.lib.monash.edu/MON:catau51218316670001751>

The Illustrated Network: how TCP/IP Works in a modern network

<http://search.lib.monash.edu/MON:catau51213291120001751>

Network Consultants Handbook

<http://search.lib.monash.edu/MON:catau21128550760001751>