MONASH University
Information Technology

FIT2018
Network administration

Unit Guide

Semester 1, 2010

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FIT2018 Network administration - Semester 1, 2010

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Additional communication information:

The best opportunity for discussing unit topics is through tutorials and face to face consultations. These are scheduled regularly during the semester. Additional consultation is possible, but please e-mail the lecturer or tutor in order to make an appointment.

The online discussion tool (forum) is another option. In some situations, this will be more appropriate, particularly where the question may be relevant not only to the student posing the question, but potentially to others who are also reading the forum The response time, however, may vary. Lecturers and tutors will endeavor to reply in a timely fashion, but there is no guarantee of immediate electronic replies after hours, whether by e-mail or Blackboard/Moodle.

Introduction

This unit guide contains information regarding the intended delivery of this unit. The synopsis, objectives, and broad assessment details for this unit are published in the official university handbook entry:

http://www.monash.edu.au/pubs/handbooks/units/FIT2018.html

This unit guide does not supersede the official handbook entry as in the above link. However, the sequence of lectures and topics, or the degree of emphasis on particular topics as implied by their inclusion in the topical outline in this unit guide, may be varied during the semester at the discretion of the chief examiner. However, such variations will never compromise the unit objectives.

Unit synopsis

The unit will provide students with fundamentals and theoretical foundations of Network Administration. In addition, students will acquire practical skills needed to plan, provide and manage networks, by presentation of the following topics: Introduction to Network Administration. Scope, Goals, Philosophy and Standards; IT System Components and Network Structures, Technology and Protocols; System Administration: Host computer and User management; Network Administration methods and Standards. Managing devices using SNMP, RMON, WBEM and JMX; Management issues: Planning, Implementation, Fault diagnosis and Performance; Network Simulation as a management tool; Network Documentation; Network Security and Administration; and Provision and Management of common network and application services, such as name, database and web servers.

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 ARP, ICMP, BOOTP, DHCP, DNS, LDAP etc);
- network application protocols and data structures used by network management systems (such as ASN.1, SNMP, SMI/MIB, RMON, DMTF/DMI, WBEM and WMI);
- factors involved in and be able to manage the security, reliability and performance of computer networks;

The ability to:

- independently research topics and resolve problems associated with network management;
- understand and use a range of hardware and software tools for network administration;
- install, configure and manage network application services such as name, database and web servers.

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

Prerequisites

FIT1005 or CPE1007 or CSE2318 or CSE3318 or equivalent

Prohibitions

CSE3153, CPE2009, CPE3012, CPE5013

Teaching and learning method

Teaching approach

- On campus Lecture
- On campus Tutorial/Laboratory

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system: http://allocate.its.monash.edu.au/

Unit Schedule

Week	Date	Topic	Key dates
1	01/03/10	Introduction to Network Administration	
2	08/03/10	System and Network Components	Tutorials begin this week
3	15/03/10	Managing Hosts and Users	
4	22/03/10	TCP/IP Network Administration	
5	29/03/10	Configuration Management	Quiz 1 during tutorials
Mid semester break			
6	12/04/10	Network Administration Standards and SNMP	
7	19/04/10	Fault & Performance management	
8	26/04/10	Desktop & Enterprise management	
9	03/05/10	Network Security	
10	10/05/10	Network Simulation	Quiz 2 during tutorials
11	17/05/10	Web-Based Network Management	
12	24/05/10	Advances and Research in Network Administration	Project demos during tutorials, and report due Friday
13	31/05/10	Revision & Exam preparation	

Unit Resources

Prescribed text(s) and readings

There are no required texts for this unit, however please see the Recommended Reading section below.

Text books are available for loan from the Monash University library and for purchase 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

Primary texts recommended:

Burgess, M. *Principles of Network and System Administration* (2nd Ed), Wiley, 2004, ISBN 0470868074. (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, ISBN 0-321-49266-8. (http://library.monash.edu.au/vwebv/holdingsInfo?bibId=2253326)

Supplementary texts:

Burke, J.R., *Network Management Concepts and Practice: a Hands-on Approach*, Pearson, 2004, ISBN 0130329509.

Subramanian, M.. *Network Management: Principles and Practice*, Addison Wesley, 2000, ISBN 0201357429.

Stallings, W., *SNMP, SNMPv2, SNMPv3 and RMON I and II* (3E), Addison Wesley, 1998, ISBN 0201485346.

Stallings, W., *Data and Computer Communications* (7E), Prentice Hall, 2004, ISBN 0131006819.

Hunt, C., *TCP/IP Network Administration* (3E), OReilly, 2002, ISBN 0596002971.

Mikalsen, A. and Borgesen, P., *Local Area Network Management, Design and Security*, John Wiley and Sons, 2002, ISBN 0 471 49769 X.

Required software and/or hardware

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.

Equipment and consumables required or provided

Desktops and networking equipment are provided for use during tutorials and projects in the Caulfield School of IT network laboratory for on-campus students. However, students will have to provide their own CDs for burning KNOPPIX Linux images into if live CD is what they prefer. The KNOPPIX CD must be brought along for lab work for all tutorials. Students are also encouraged to carry USB pen drives in order to store intermediate work, such as configuration files and scripts, or partial reports. USB pen drives of 1 GB or more may also be installed with Linux, and students may do their work on those devices instead.

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 8 hours per week for reading and private study, including time for the use of a computer to access web-based discussion groups.

Study resources

Study resources we will provide for your study are:

- This Unit Information outlining the administrative information for the unit
- The FIT2018 web site, where lecture slides, weekly tutorial requirements, assignment specifications, sample solutions and supplementary resources and other material will be poste
- Web-based discussion groups that can be accessed from the FIT2018 unit web site.

Assessment

Overview

Examination (3 hours): 60%; In-semester assessment: 40%

Faculty 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.

Students are encouraged to attend all their lectures and tutorials. While failure to do so does not impose penalties to their grades, consistently being present in class has been proven to positively affect student performance in assessments.

Please note as well that **two quizzes in this unit will be held during tutorials**. Unless a Special Consideration application is successful, the Faculty is not obliged to provide the absentee with another quiz to make up for the one that was missed. Information about Special Consideration matters can be found below under Due Dates and Extensions.

Assignment tasks

Assignment coversheets

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.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

- **Assignment task 1**

  Title:
  Tutorial Quiz 1
  Description:
  Students will take a quiz for a topic covered in the previous weeks on the basics of networks, systems and configuration management. This quiz will include theoretical as well as practical components.
  Weighting:
  5%
  Due date:
  Tutorials in Week 5

- **Assignment task 2**

  Title:
  Tutorial Quiz 2
  Description:
  Students will take a quiz for a topic covered in the previous weeks on fault, accounting, performance and security management. This quiz will include theoretical as well as practical components. Changes to the coverage will be announced up to a week prior to the quiz.
  Weighting:
  10%
  Due date:
  Tutorials in Week 10

- **Assignment task 3**

  Title:
  Network Administration Project
  Description:
  This project will entail both practical and theoretical aspects of the unit. Students in groups of at most three members each will be required to build a small network, configured with a few basic network services. Concise documentation will also be required for submission. Specific requirements will be made available to students in Week 8, but assessment of this project will require the following:

  1. A practical demo of the installation, configuration and operation of the network and its services. Students will be expected to answer questions during the demo.
  2. A concise report that documents the network will be submitted on the Friday of Week 12.

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

  Note that the network to be built may consist of physical or virtual machines, or a combination of both. There are obvious advantages to using virtual machines, and so that avenue is highly encouraged.
  Weighting:
  25%
  Due date:
  Week 12

Examination

- **Weighting:** 60%
  Length: 3 hours
  Type (open/closed book): Closed book

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

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 not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

Late assignment

Assignments received after the due date, without previously arranged extension (see 14.8 Extensions, below...), will be subject to a penalty of 5% per day, including weekends. Assignments received later than one week (seven days) after the due date will not normally be accepted. In some cases, this period may be shorter if there is a need to release sample solutions.

This policy is strict because comments or guidance will be given on assignments as they are returned, and sample solutions may also be published and distributed, after assignment marking or with the returned assignment.

Return dates

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

Appendix

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams