



# ITEC850

## Network Management

S1 Evening 2014

*Computing*

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## General Information

Unit convenor and teaching staff

Unit Convenor

Milton Baar

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Contact via [milton.baar@mq.edu.au](mailto:milton.baar@mq.edu.au)

Credit points

4

Prerequisites

COMP347

Corequisites

Co-badged status

Unit description

This unit covers architecture, analysis, design, standards and migration issues related to the operation, management and control of distributed systems and communication networks for voice, data, image, and networked computing. Initially the focus is on the fundamental building blocks of network management architecture. These basics are built upon by discussing advanced topics including broadband and web-based network management, telecommunications management, security management, management platforms and applications/research issues such as delegated agents and management of mobile or ad hoc networks.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Develop skills in the technologies used within network management

Develop skills in analysing and implementing policies, procedures and human issues in network management

Evaluate and analyse security issues introduced by, and sometimes solved by, network management

Understand general networking concepts

## Assessment Tasks

Name	Weighting	Due
<u>Class presentations</u>	15%	Weekly
<u>Quiz</u>	10%	27/3/14
<u>Assignment 1</u>	20%	1/5/2014
<u>Group project or case study</u>	20%	5/6/2014
<u>Exam</u>	35%	TBA

### Class presentations

Due: **Weekly**

Weighting: **15%**

Each week from week 2, readings relating to weekly topics uploaded to iLearn will be presented by students and discussed amongst the class. Students should review the all the weekly readings and then select three topic areas to analyse in more detail. The analysis, presentation to the class and subsequent class discussion will form the components of this assessment task.

Each student must present to the class three times per term; each presentation is worth 5% and will be marked by the lecturer.

More than one student may present on the same topic and students are presenting to the class, not the lecturer. Students do not have to present in the same week as the topic under discussion but cannot present earlier than the topic under discussion. For example:

- a student may select to present in weeks 4, 7 and 10 but **may not** present a week 5 or later topic in week 4, nor a week 8 or later topic in week 7 etc.
- a student may select to present in weeks 4, 7 and 10 and **may** present a week 4 topic in week 4, a week 6 topic in week 7 etc.

### Quiz

Due: **27/3/14**

Weighting: **10%**

A multiple choice quiz used as a diagnostic tool, covering material from weeks 1-4 inclusive.

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## Assignment 1

Due: **1/5/2014**

Weighting: **20%**

Your submission should be about 2500 words in length. The structure of the paper should be as follows:

- Abstract
- Introduction.
- CMIP description.
- Description of factors used for comparison (as given above) and their relevance.
- Comparison with CMIP and SNMP version 1. (Be argumentative).
- Conclusion/Recommendations.
- References.

### **About Argumentative Papers**

The student services staff at Charles Sturt University in Australia defines an argument as “a series of generalizations or propositions, supported by evidence or reasoning and connected in a logical manner, that lead to a justified conclusion. You must sustain your argument by giving evidence and reasons.”

In other words, your approach here is to take a stand on an issue and use evidence to back-up your stance, not to explore or flesh out an unresolved topic.

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## Group project or case study

Due: **5/6/2014**

Weighting: **20%**

In this research paper, you must first describe the aims/goals of LTE or 4G Communications systems. Then discuss the important challenges for migrating to the LTE or 4G networks. Explain the vertical and horizontal handover in heterogeneous networks. Discuss any one of the techniques in detail to provide better Quality of Service (QoS) for a roaming node. Highlight the advantages and disadvantages of your approach.

Your submission should be about 2500 words in length.

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## Exam

Due: **TBA**

Weighting: **35%**

Details on iLearn

On successful completion you will be able to:

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## Delivery and Resources

ITEC850 is taught via lectures, and tutorials.

Lectures are used to introduce new material, give examples and techniques and put them in a wider context. While lectures are largely one to many presentations, you are encouraged to ask questions of the lecturer to clarify anything you might not be sure of.

Tutorials are group classes that give you the opportunity to interact with your peers. You will be given tasks to solve each week prior to the tutorial; preparing solutions is important because it will allow you to discuss the problems effectively with your tutor and maximise the feedback you get on your work. Each week you will be given an hour after the tutorials to work on the following

tasks.

It is important that you keep up with these tasks, as doing so will help you understand the material in the unit and prepare you for the work in assignments.

All assessment tasks are undertaken using iLearn, apart from weekly discussions. All assignments must be submitted on iLearn on the ITEC850 page. Assignments may also be emailed to [milton.baar@mq.edu.au](mailto:milton.baar@mq.edu.au) but **must** be submitted using iLearn first.

## Unit Schedule

Week	Topic
Lecture 1	Introduction to Network Management
Lecture 2	SNMPv1 (Part 1)
Lecture 3	SNMPv1: (Part 2)
Lecture 4	SNMPv2 and SNMPv3 and <b>Quiz</b>
Lecture 5	Web based Management
Lecture 6	Mobile Networks: Location Management
Lecture 7	QoS (Part 1) and <b>Deadline for Submission of Individual Assignment</b>
Lecture 8	QoS (Part 2)
Lecture 9	Policy based network
Lecture 10	Service / Security Management
Lecture 11	Network Management Systems and Tools: Evaluation of Commercial Network Management Systems and <b>Deadline for Submission of Groupwork/Case Study</b>
Lecture 12	Revision

## Learning and Teaching Activities

### Lectures

Weekly lectures and notes

### Tutorial/Practicals

Weekly theoretical and practical exercises

### Reading

Weekly recommended reading to assist learning concepts and stimulate discussion topics.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to

Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/hel>

p/.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

#### Learning outcomes

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#### Assessment tasks

- Quiz
- Assignment 1
- Group project or case study
- Exam

### PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

#### Learning outcomes

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management

## Assessment tasks

- Quiz
- Assignment 1
- Group project or case study
- Exam

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## Learning outcomes

- Develop skills in the technologies used within network management
- Develop skills in analysing and implementing policies, procedures and human issues in network management
- Evaluate and analyse security issues introduced by, and sometimes solved by, network management

## Assessment tasks

- Assignment 1
- Group project or case study

## PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

## Assessment tasks

- Assignment 1
- Exam

## PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their

professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

## Assessment task

- Group project or case study

## Standards

### Standards

Four standards, namely HD, D, CR, P summarize as many different levels of achievement. Each standard is precisely defined to help students know what kind of performance is expected to deserve a certain mark. The standards corresponding to the learning outcomes of this unit are given below:

Grade	LO 1	LO 2	LO3	LO 4
	<b>Technology domain</b>	<b>Policy domain</b>	<b>Security domain</b>	<b>Generic skills</b>
HD	Apply techniques and knowledge in new contexts; show breadth and depth of understanding of networking technologies.	Understand how networks can be managed in regards to quality assurance. Show breadth and depth of understanding on issues in the management of networks, including: change management, configuration management and planning, hardware asset management and capacity planning and availability. Apply these techniques and knowledge in new contexts.	Understand threats to networks and assets, explain how to measure the threats and risks and evaluate suitable mitigation techniques.	Demonstrate leadership, creativity, critical thinking and analysis skills. Enthusiastic in acquiring new knowledge in the network management area. Demonstrate capability in applying new network management knowledge to solve real-world problems. Conduct teamwork effectively and play a key role in moving the whole project team forward.
D	Apply techniques and knowledge in some new contexts; show breadth and depth of understanding across most of the topics.	Understand most topics related to how networks can be managed in regards to quality assurance. Show breadth and depth of understanding on most issues in the management of networks, including: change management, configuration management and planning, people management, hardware asset management and capacity planning and availability. Able to apply these techniques and knowledge in some new contexts.	Understand many threats to networks and assets, how to measure the threats and risks and evaluate suitable mitigation techniques.	Demonstrate some leadership occasionally. Show creativity, critical thinking and analysis skills. Have the capability in applying network management knowledge to solve real-world problems. Collaborate with team members well and finish assigned tasks on time and with good quality.

CR	Understand technology issues across most of the topic areas	Understand some aspects of how networks can be managed in regards to quality assurance. Show breadth of understandings on most issues in the management of networks, including: change management, configuration management and planning, people management, hardware asset management and capacity planning and availability.	Understand some threats to networks and assets, how to identify threats and risks and evaluate the range of mitigation techniques.	Demonstrate analysis skills in some occasions. Know how to apply network management knowledge to solve some of the real-world problems. Able to finish assigned tasks on time and with good quality most of the time.
P	Remember definitions and ideas, show some breadth of understanding of the topics.	Can remember some definitions and ideas, show some breadth on issues in the management of networks, including: change management, configuration management and planning, people management, hardware asset management and capacity planning and availability.	Understand basic risk principles relating to network management.	Demonstrate limited analysis skills. Can apply network management knowledge to solve limited real-world problems. Able to finish all assigned tasks on time and with acceptable quality.

## Grading

At the end of the semester, you will receive a grade that reflects your achievement in the unit

- **Fail (F):** does not provide evidence of attainment of all learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; and incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.
- **Pass (P):** provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; and communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.
- **Credit (Cr):** provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; plus communication of ideas fluently and clearly in terms of the conventions of the discipline.
- **Distinction (D):** provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.

- **High Distinction (HD):** provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application.

In this unit, your final grade depends on your performance in each part of the assessment. For each task, you receive a mark that combines your standard of performance regarding each learning outcome assessed by this task. Then the different component marks are added up to determine your total mark out of 100. Your grade then depends on this total mark and your overall standards of performance.

**In particular, in order to pass the unit, you must**

- Have performed satisfactorily in the internal (assessment) components of the course.
- Have satisfactory performance in the final examination.

This means that you may fail the unit if you do not submit satisfactory submissions for the assignments and do not perform satisfactorily in the exam.

**Department of Computing expectations are that students have to perform satisfactorily in the final exam as well as in their internal work/assignments.**

Obtaining a grade higher than a Pass (P) in this unit will require a student to obtain (in addition to the above):

- the required total number of marks (Credit - 65, Distinction - 75, High Distinction - 85).