ELEC828

Software Defined Networking

S1 Day 2017

Dept of Engineering

Contents

General Information

Unit convenor and teaching staff
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Credit points
4

Prerequisites
Admission to MEng

Corequisites

Co-badged status

Unit description
This unit, Software Defined Networking (SDN) will develop Knowledge and Skills on most advanced concepts and technologies to automate the network configuration and management on big scale which will improve operational efficiency and reduce costs. That can be achieved by utilizing the distribution of network control, virtualization, Network Function ventilation (NFV) and cloud computing This unit introduces Network programmability, Virtual Machine, Virtualization, Network Function ventilation (NFV) and cloud computing the basic concepts and techniques of SDN and SDN architectures, data and control planes, SDN switches, virtualization, network operating systems, controller platforms, open flow Protocol, API, self-optimized networks (SON) , SDN 4G-5G mobile applications the unit includes practical work in Networking.

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:

Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications

Model Network Virtualization and network function virtualization, concept and applications

Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.

Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.

Demontrate competence to model and apply SDN Technology for mobile communication Networks and SDN Security

Assessment Tasks

Name	Weighting	Hurdle	Due
Class Tests , Week 4,7,10	45%	No	Week 4,7,10
Project Research Paper	45%	No	Week 13
Presentation	10%	No	W12

Class Tests , Week 4,7,10

Due: **Week 4,7,10**
Weighting: **45%**

Class Tests

On successful completion you will be able to:

- Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications
- Model Network Virtualization and network function virtualization, concept and applications
- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.

- Demontrate competence to model and apply SDN Technology for mobile communication Networks and SDN Security

Project Research Paper

Due: **Week 13**
Weighting: **45%**

Research paper on an area of SDN and NFV. The task is to read a set of selected papers, and provide a critical review of the research area covered by those papers, as well as integrating the relevant material from the lectures. The review must be written as a review article in the format that would be submitted for publication in an IEEE Journal publication, with abstract, introduction, conclusions and references, as well as the main body of the paper. The report is due in week 13.

On successful completion you will be able to:

- Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications
- Model Network Virtualization and network function virtualization, concept and applications
- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
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Presentation

Due: **W12**
Weighting: **10%**

Each student will give a 15 minute presentation on a SDN Topic or applications in week 12.

On successful completion you will be able to:

- Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications
- Model Network Virtualization and network function virtualization, concept and applications
- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
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computing architecture.

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Delivery and Resources

The Unit delivery consists of interactive classes, Lectures, Research Project and research Presentation, quizzes class tests. It is the responsibility of the students to be active and focused regularly, attend the lectures, study the subject resources, and answer the review questions .Students will Accumulate the knowledge through strategies such as quizzes, problem-solving, presentations, discussion or debates. Work related to SDN, NFV ,applications is performed by students in groups to encourage collaborative learning.

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

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

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

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

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/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://stu

dents.mq.edu.au/support/

Learning Skills

Learning Skills (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

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

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:

Learning outcomes

- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
- Demontrate competence to model and apply SDN Technology for mobile communication Networks and SDN Security

Assessment tasks

- Project Research Paper
- Presentation

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

- Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications
- Model Network Virtualization and network function virtualization, concept and applications
- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
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Assessment tasks

- Class Tests , Week 4,7,10
- Presentation

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

- Model Network Virtualization and network function virtualization, concept and applications
- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and

SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
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Assessment tasks

- Class Tests , Week 4,7,10
- Project Research Paper
- Presentation

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

- Demonstrate ability to analyse SDN fundamentals, Open flow Protocol, open Stack and SDN potential.
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
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Assessment tasks

- Class Tests , Week 4,7,10
- Project Research Paper
- Presentation

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:

Learning outcomes

- Demonstrate knowledge of SDN enabling technologies such as Network programmability and applications
- Demonstrate ability to describe to model NFV -SDN Application in Data Centres- Cloud computing architecture.
- Demontrate competence to model and apply SDN Technology for mobile communication Networks and SDN Security

Assessment tasks

- Project Research Paper
- Presentation

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcome

- Demontrate competence to model and apply SDN Technology for mobile communication Networks and SDN Security

Assessment tasks

- Project Research Paper
- Presentation