



# COIT20261 Network Routing and Switching

## Term 1 - 2023

Profile information current as at 29/04/2024 09:29 am

All details in this unit profile for COIT20261 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

### General Information

#### Overview

This unit provides you with fundamental skills and knowledge in the design and operation of computer networks. It deals in-depth with the techniques described in current Internet protocols to forward data packets from source to destination through different types of networks. You will focus on the Transport and Internet layer functions with emphasis on IPv4 addressing as well as switching and routing technologies. An introduction to IPv6 and transition issues is included. The unit covers these functions in both Local Area Networks (LANs) and Wide Area Networks (WANs). The function of the key protocols in wireless networks are also discussed, ensuring a well-rounded grounding to enable easier adaptation to imminent significant developments such as the global adoption of IPv6 and the growing dominance of wireless networking in business and everyday life. Delivery of this comprehensive content is through a weekly lecture and tutorial which includes theory and some hands-on lab activity where available.

#### Details

Career Level: *Postgraduate*

Unit Level: *Level 9*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

Prerequisite: COIT20246 Networking and Cyber Security Anti-requisite: COIT20229 Networking with TCI/IP.

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

#### Offerings For Term 1 - 2023

- Brisbane
- Melbourne
- Online
- Rockhampton
- Sydney

#### Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

#### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

### Class Timetable

#### [Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### 1. **Written Assessment**

Weighting: 20%

#### 2. **Written Assessment**

Weighting: 30%

#### 3. **Online Test**

Weighting: 50%

### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from Reflection and discipline team discussion and feedback

**Feedback**

A more flexible online-based and less stressful end of term assessment could replace the current take-home exam.

**Recommendation**

Replace the take-home exam with a comprehensive Online Test utilising the extensive Moodle quiz facilities.

#### Feedback from Reflection, students, and team discussion and feedback

**Feedback**

More practical networking activities in a computer lab would improve the engagement and skills of students.

**Recommendation**

Increase the number of hands-on networking activities by utilising the network labs.

## Unit Learning Outcomes

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

1. Apply your knowledge in Network Routing to solve problems in wired and wireless networks
2. Develop IP addressing plans for organisational networks
3. Analyse the application of wireless network technologies in different scenarios
4. Compare and contrast the protocols and standards in routing and switching
5. Evaluate the complexities involved in transitioning to new technologies such as IPv6.

The Australian Computer Society (ACS), the professional association for Australia's ICT sector, recognises the Skills Framework for the Information Age (SFIA). SFIA is adopted by organisations, governments, and individuals in many countries and provides a widely used and consistent definition of ICT skills. SFIA is increasingly being used when developing job descriptions and role profiles. ACS members can use the tool MySFIA to build a skills profile.

This unit contributes to the following workplace skills as defined by [SFIA 8](#) (the SFIA code is included):

- Systems Design (DESN)
- Systems integration and build (SINT)
- Network Support (NTAS)
- Configuration Management (CFMG).














## Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%	•	•			
2 - Written Assessment - 30%			•	•	•
3 - Online Test - 50%	•	•	•	•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge					
2 - Communication					
3 - Cognitive, technical and creative skills					
4 - Research					
5 - Self-management					
6 - Ethical and Professional Responsibility					
7 - Leadership					
8 - Aboriginal and Torres Strait Islander Cultures					

## Textbooks and Resources

### Textbooks

COIT20261

#### Prescribed

#### Data Comms And Networking With Tcp/Ip Protocol Suite

Edition: 6th edn (2021)

Authors: Forouzan, B

McGraw Hill

New York , NY , USA

ISBN: 9781260597820 print ; 9781264363353 ebook

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Cisco Packet Tracer
- Wireshark - Network Protocol Analyser

## Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Zhenglin Wang** Unit Coordinator

[z.wang@cqu.edu.au](mailto:z.wang@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction; TCP/IP Protocol Suite; Numbering Systems	Chapter 1 & Appendix B	

### Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to the Transport Layer; User Datagram Protocol (UDP)	9	

### Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Transmission Control Protocol (TCP)	9	

### Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
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Introduction to the Network Layer; IPv4 Addresses Part I

7

#### Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
IPv4 Addresses Part II	7	

#### Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
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#### Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Delivery and Forwarding of IP Packets; Address Resolution Protocol (ARP)	7	<b>WRITTEN ASSESSMENT 1: IP NETWORKING</b> Due: Week 6 Friday (21 Apr 2023) 11:59 pm AEST

#### Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Internet Protocol Version 4 (IPv4); Internet Control Message Protocol (ICMP)	7	

#### Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Unicast Routing Protocols (RIP, OSPF, and BGP)	8	

#### Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
IPv6 Addressing; IPv6 Protocol; Routing in IPv6; ICMPv6	7	

#### Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Routing in Wireless Networks	Chapter 4 discusses basic WiFi Lecture will discuss wireless routing protocols using other sources	<b>WRITTEN ASSESSMENT 2: ROUTING AND SWITCHING</b> Due: Week 10 Friday (19 May 2023) 11:59 pm AEST

#### Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Host Configuration: DHCP; Domain Name System (DNS)	Chapter 10 discusses DNS. Lecture will discuss DHCP using other sources	

#### Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Switching in LANs and WANs; Multi-Protocol Label Switching (MPLS)	Chapter 7 and online sources	

#### Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
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#### Exam Week - 19 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
Check for notifications of details of the exam in the unit website.		

## Term Specific Information

For any term-specific information, please contact your Unit Coordinator via E-mail at [z.wang@cqu.edu.au](mailto:z.wang@cqu.edu.au)

## Assessment Tasks

### 1 WRITTEN ASSESSMENT 1: IP NETWORKING

**Assessment Type**

Written Assessment

**Task Description**

You are required to demonstrate your knowledge of IP networking, including IP addressing and subnetting, by completing a number of exercise questions. There will be multiple questions requiring a mix of numerical and descriptive answers. Exploratory exercises using common networking tools may also be presented. The assessment and further description of the requirements can be found in Moodle. This is an individual assignment, and no group work or group submission applies.

**Assessment Due Date**

Week 6 Friday (21 Apr 2023) 11:59 pm AEST

Your assignment must be submitted in the format specified in the assignment. See Moodle unit website for details.

**Return Date to Students**

Week 8 Friday (5 May 2023)

**Weighting**

20%

**Assessment Criteria**

Your answers will be marked based on technical correctness, completeness, clarity and relevance. Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question requires you to submit a graphic (e.g. a screenshot or a diagram), the graphic must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with all or any text within the graphic being legible and readable, in order to be marked. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**Submission Instructions**

The assignment must be submitted online in Moodle.

**Learning Outcomes Assessed**

- Apply your knowledge in Network Routing to solve problems in wired and wireless networks
- Develop IP addressing plans for organisational networks

### 2 WRITTEN ASSESSMENT 2: ROUTING AND SWITCHING

**Assessment Type**

Written Assessment

**Task Description**

You are required to demonstrate your knowledge of routing and switching in networks, by completing a number of exercise questions. There will be multiple questions requiring a mix of numerical and descriptive answers. Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. Some

questions may require research of technologies or relevant technology trends not covered in lectures or the textbook. The assessment and detailed description of the requirements can be found in Moodle. This is an individual, not a group, assignment.

**Assessment Due Date**

Week 10 Friday (19 May 2023) 11:59 pm AEST

Your assignment must be submitted in the format specified in the assignment. See Moodle unit website for details.

**Return Date to Students**

Week 12 Friday (2 June 2023)

**Weighting**

30%

**Assessment Criteria**

Your answers will be marked based on technical correctness, completeness, clarity, originality and relevance. Proper use of referencing conventions are expected and marks may be deducted for failure to comply. For discussion or research-based questions, if you decide to submit a graphic (e.g. a screenshot or a diagram) in support of your answer, the graphic must be relevant to your discussion, be appropriately referenced, and must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with any text within the graphic being legible and readable. Originality means the work is your own and is expressed in your own words. An answer is unacceptable if it is composed mostly of quoted material from other sources, and may receive no marks as a result.

Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**Submission Instructions**

The assignment must be submitted online in Moodle.

**Learning Outcomes Assessed**

- Analyse the application of wireless network technologies in different scenarios
- Compare and contrast the protocols and standards in routing and switching
- Evaluate the complexities involved in transitioning to new technologies such as IPv6.

### 3 WRITTEN ASSESSMENT 3: COMPREHENSIVE ONLINE TEST

**Assessment Type**

Online Test

**Task Description**

This final assessment will consist of an Online Test presented in the form of a Moodle Quiz. The test consists of 25 questions including a mix of multiple-choice and short answer items drawn from the range of topics studied during the term. The test is time-limited to 3 hours, will be open-book, and will be available during the scheduled Exam Week on a date to be announced.

The assessment questions may include terms and concepts learned during term, practical problems relating to routing and switching operations, protocols, or functions.

**Assessment Due Date**

The exact date and time the assessment will become available in Moodle will be announced some time from week 10 onwards.

**Return Date to Students**

Not returned, but viewable on request. Overall results become available on Certification Date (see Academic Calendar).



**Weighting**

50%

**Assessment Criteria**

Your answers will be marked based on technical correctness, completeness, clarity, originality and relevance. Proper use of referencing conventions are expected and marks may be deducted for failure to comply. For discussion or research-based questions, if you decide to submit a graphic (e.g. a screenshot or a diagram) in support of your answer, the graphic must be relevant to your discussion, be appropriately referenced, and must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with any text within the graphic being legible and readable. Originality means the work is your own and is expressed in your own words. An answer is unacceptable if it is composed mostly or solely of quoted material from other sources, and may receive no marks as a result.

Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**Submission Instructions**

This assessment must be submitted in Moodle.

**Learning Outcomes Assessed**

- Apply your knowledge in Network Routing to solve problems in wired and wireless networks
- Develop IP addressing plans for organisational networks
- Analyse the application of wireless network technologies in different scenarios
- Compare and contrast the protocols and standards in routing and switching
- Evaluate the complexities involved in transitioning to new technologies such as IPv6.

## Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

### What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

### Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

### Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

### What can you do to act with integrity?



#### Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



#### Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



#### Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem