



COIT20264 Enterprise and Cloud Networking

Term 1 - 2024

Profile information current as at 19/05/2024 08:20 am

All details in this unit profile for COIT20264 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 equips you with the skills and knowledge necessary to design enterprise-level networks utilising the latest on-premises, wireless, and cloud networking technologies. It also provides you with the ability to gather business and technical requirements, as well as to justify the selection of network technologies when there are conflicting requirements, such as cost, performance, security, and business goals. The unit includes the application of industry-grade tools and techniques in network design, deployment, and management, including automation, remote access, high availability, testing, and documentation.

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: COIT20261 Network Routing and Switching

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 - 2024

- 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: 30%

2. **Portfolio**

Weighting: 20%

3. **Written Assessment**

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 Student feedback

Feedback

Link content to real-world applications.

Recommendation

Prepare lecture slides containing some examples with details of the latest technologies to be used in wireless LAN and wireless WAN design technologies and make them available on Moodle.

Feedback from Teaching team

Feedback

Include prototype implementation of designed network.

Recommendation

Review the assessments to include prototype implementation on the cloud and/or using in-house hardware available in campus networking labs. Use of Cisco Packet Tracer networking simulation tool is another option to consider.

Unit Learning Outcomes

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

1. Analyse business and technical requirements to create plans and designs for enterprise networks
2. Justify the selection of network technologies when there are conflicting requirements, such as cost, performance, security and business goals
3. Design networks comprising a range of technologies, including on-premise, wireless and cloud
4. Apply industry-grade tools and techniques when designing, deploying and managing networks, including automation, remote access and high availability.

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):

- IT Infrastructure (ITOP)
- Network Design (NTDS)
- Network Support (NTAS)
- Information Security (SCTY)
- Security Operations (SCAD)
- Problem Management (PBMG)
- Service Level Management (SLMO)
- Change Control (CHMG)

The National Initiative for Cybersecurity Education ([NICE](#)) Framework defines knowledge, skills and tasks needed to perform various cyber security roles. Developed by the National Institute of Standards and Technology (NIST), the NICE Framework is used by organisations to plan their workforce, including recruit into cyber security positions.

This unit helps prepare you for roles such as Systems Security Analyst, Network Operations Specialist and Systems Administrator, contributing to the following knowledge and skills:

- K0010 Knowledge of communication methods, principles, and concepts that support the network infrastructure.
- K0011 Knowledge of capabilities and applications of network equipment including routers, switches, bridges, servers, transmission media, and related hardware.
- K0029 Knowledge of organization's Local and Wide Area Network connections.
- K0050 Knowledge of local area and wide area networking principles and concepts including bandwidth management.
- K0053 Knowledge of measures or indicators of system performance and availability.
- K0061 Knowledge of how traffic flows across the network (e.g., Transmission Control Protocol [TCP] and Internet

Protocol [IP], Open System Interconnection Model [OSI], Information Technology Infrastructure Library, current version [ITIL]).

- K0071 Knowledge of remote access technology concepts.
- K0088 Knowledge of systems administration concepts.
- K0104 Knowledge of Virtual Private Network (VPN) security.
- K0108 Knowledge of concepts, terminology, and operations of a wide range of communications media (computer and telephone networks, satellite, fiber, wireless).
- K0111 Knowledge of network tools (e.g., ping, traceroute, nslookup).
- K0113 Knowledge of different types of network communication (e.g., LAN, WAN, MAN, WLAN, WWAN).
- K0130 Knowledge of virtualization technologies and virtual machine development and maintenance.
- K0137 Knowledge of the range of existing networks (e.g., PBX, LANs, WANs, WIFI, SCADA).
- K0138 Knowledge of Wi-Fi.
- K0160 Knowledge of the common attack vectors on the network layer.
- K0180 Knowledge of network systems management principles, models, methods (e.g., end-to-end systems performance monitoring), and tools.
- K0318 Knowledge of operating system command-line tools.
- K0332 Knowledge of network protocols such as TCP/IP, Dynamic Host Configuration, Domain Name System (DNS), and directory services.
- K0333 Knowledge of network design processes, to include understanding of security objectives, operational objectives, and trade-offs.
- S0004 Skill in analyzing network traffic capacity and performance characteristics.
- S0033 Skill in diagnosing connectivity problems.
- S0035 Skill in establishing a routing schema.
- S0041 Skill in installing, configuring, and troubleshooting LAN and WAN components such as routers, hubs, and switches.
- S0073 Skill in using virtual machines. (e.g., Microsoft Hyper-V, VMWare vSphere, Citrix XenDesktop/Server, Amazon Elastic Compute Cloud, etc.).
- S0084 Skill in configuring and utilizing network protection components (e.g., Firewalls, VPNs, network intrusion detection systems).

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
1 - Written Assessment - 30%	•	•		
2 - Portfolio - 20%	•		•	•
3 - Written Assessment - 50%		•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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

COIT20264

Prescribed

Top-Down Network Design

Edition: 3rd (2011)

Authors: Priscilla Oppenheimer

Cisco Press

Indianapolis , IN , USA

ISBN: 978-1-58720-283-4

Binding: Hardcover

[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

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

Schedule

Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Enterprise and Cloud Networking		

Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Analysing Business Goals and Constraints		

Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Characterising Existing Networks and Traffic		

Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Resource Planning for Network Design		

Week 5 - 01 Apr 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Network Topology Design		
Vacation Week - 08 Apr 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Week 6 - 15 Apr 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Selecting Network Technologies		Report and Presentation of Initial Network Design Due: Week 6 Monday (15 Apr 2024) 11:45 pm AEST
Week 7 - 22 Apr 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Networking in the Cloud		
Week 8 - 29 Apr 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Remote Access		
Week 9 - 06 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Reliability in the Cloud		
Week 10 - 13 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Wireless Networks		
Week 11 - 20 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Network Management and Automation		
Week 12 - 27 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Review and Discussion		Portfolio Due: Week 12 Monday (27 May 2024) 11:45 pm AEST
Review/Exam Week - 03 Jun 2024		
Module/Topic	Chapter	Events and Submissions/Topic
		The Final Report of Comprehensive Network Design Due: Review/Exam Week Monday (3 June 2024) 11:45 pm AEST
Exam Week - 10 Jun 2024		
Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

For any queries, please contact the unit coordinator: Zhenglin Wang (e-mail: z.wang@cqu.edu.au)

Assessment Tasks

1 Report and Presentation of Initial Network Design

Assessment Type

Written Assessment

Task Description

In this assessment task, leveraging insights from weekly group discussions, you will analyse the provided scenario to strategically plan and design an enterprise network, applying the knowledge and skills acquired in this unit. The process involves active participation in weekly discussions, brainstorming, and conducting weekly lab exercises, ultimately consolidating these efforts into an initial report accompanied by a presentation. This assessment comprises two parts: a presentation (Part A) and a written report (Part B), to be completed collaboratively in groups of 3 or 4 students. While this assessment task is a group assignment, you are required to submit your work individually; failure to do so will result in a zero mark.

Additional details regarding this assessment task are available in the Assessment Item 1 specifications on the Moodle unit website.

Assessment Due Date

Week 6 Monday (15 Apr 2024) 11:45 pm AEST

Return Date to Students

Week 8 Monday (29 Apr 2024)

Late submissions with or without extension approvals may be returned after the above dates.

Weighting

30%

Assessment Criteria

Your report and presentation will be evaluated based on quality, correctness, and clarity using specified marking criteria. The two parts of this assessment task carry the following weightings:

- Presentation (Part A) - 10%
- Written Report (Part B) - 20%

Additional details regarding the assessment criteria are available in the Assessment Item 1 specifications on the Moodle unit website.

Referencing Style

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

Submission

Online

Submission Instructions

Each of you is required to submit your report individually. Failure to submit will result in a zero mark.

Learning Outcomes Assessed

- Analyse business and technical requirements to create plans and designs for enterprise networks
- Justify the selection of network technologies when there are conflicting requirements, such as cost, performance, security and business goals

2 Portfolio

Assessment Type

Portfolio

Task Description

The Portfolio requires students to maintain a diary/journal for tutorial questions and/or lab exercises (e.g., screenshots, testing results, reflections, etc.) in a computer lab on a weekly basis from Week 1 to Week 10. This assignment is individual, and students collaborating in a group are required to submit their distinct work separately from others.

Assessment Due Date

Week 12 Monday (27 May 2024) 11:45 pm AEST

Return Date to Students

Review/Exam Week Friday (7 June 2024)

Late submissions with or without extension approvals may be returned after the above dates.

Weighting

20%

Assessment Criteria

The Portfolio will be evaluated according to the clarity, relevance, and quality of the consistent contributions documented in a diary/journal for tutorial questions and/or lab exercises each week. Lab exercises recorded in the Portfolio will account for 20% of the total assessment. Further details regarding the assessment criteria will be available on the unit Moodle website.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Analyse business and technical requirements to create plans and designs for enterprise networks
- Design networks comprising a range of technologies, including on-premise, wireless and cloud
- Apply industry-grade tools and techniques when designing, deploying and managing networks, including automation, remote access and high availability.

3 The Final Report of Comprehensive Network Design

Assessment Type

Written Assessment

Task Description

In this assessment task, building upon your initial network design from Assessment 1, you will perform an extended network design that incorporates optimization, justification, and security strategies to enhance the network robustness. Working collaboratively with your team (3 to 4 members), you must deliver a comprehensive report, detailing both teamwork and individual contributions to the network design within the specified scenario. While this assessment task is a group assignment, you are required to submit your work individually; failure to do so will result in a zero mark. Additional information regarding this assessment task will be available in the Assessment 3 specifications on the Moodle unit website.

Assessment Due Date

Review/Exam Week Monday (3 June 2024) 11:45 pm AEST

Return Date to Students

Assessments will be returned on the Certification date (It is required for the unit without an exam).

Weighting

50%

Assessment Criteria

You will be evaluated based on your capacity to design a network, encompassing both on-premise and cloud network designs for the provided scenario, utilizing the knowledge and skills acquired from this and previous courses. The two components, teamwork, and individual contributions will receive separate evaluations, as outlined in the provided marking table.

For additional information on the assessment criteria, please refer to the Assessment 3 specifications on the Moodle unit website.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Justify the selection of network technologies when there are conflicting requirements, such as cost, performance, security and business goals
- Design networks comprising a range of technologies, including on-premise, wireless and cloud
- Apply industry-grade tools and techniques when designing, deploying and managing networks, including automation, remote access and high availability.

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