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| Student Name |  | Student Number | |  |
| Unit Code/s & Name/s | ICTNWK539 Design and implement integrated server solutions  ICTNWK540 Design, build and test network servers | | | |
| Cluster Name  *If applicable* | Server | | | |
| Assessment Name | Design an integrated Server solution | Assessment Task No. | | 2 of 3 |
| Assessment Due Date | Week 6 | Date submitted | | / / |
| Assessor Name |  | | | |
| **Student Declaration:** I declare that this assessment is my own work. Any ideas and comments made by other people have been acknowledged as references. I understand that if this statement is found to be false, it will be regarded as misconduct and will be subject to disciplinary action as outlined in the TAFE Queensland Student Rules. I understand that by emailing or submitting this assessment electronically, I agree to this Declaration in lieu of a written signature. | | | | |
| Student Signature |  | | Date | / / |

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| **Instructions to Student** | General Instructions:  This written assessment contains two (2) parts:   1. Part 1 – Project Proposal 2. Part 2 – Task Scheduling   The answers required for these tasks shall be written in plain English, using language that is understandable by a person of a technical level suitable for the case study.  Materials to be supplied:  For the student to successfully complete this assessment they will need to acquire:  A computer system installed with a current desktop operating system with appropriate internet browser, and office suite able to save in Microsoft Word .docx format, and current industry standard file formats  Internet access  Uptown IT documentation, located in Connect    Work, Health and Safety:  TAFE Queensland student rules are designed to ensure that learners are aware of their rights as well as their responsibilities. All learners are encouraged to familiarise themselves with the TAFE Queensland student rules, specifically as they relate to progress of study and assessment guidelines.  Student rules: <http://tafeqld.edu.au/current-students/student-rules/>  Assessment Criteria:  To achieve a satisfactory result, your assessor will be looking for your ability to demonstrate the following key skills/tasks/knowledge to an acceptable industry standard:  Knowledge and understanding of GAP analysis.  Understanding the design and process of a server installation.  Knowledge and understanding of server roles and services  Knowledge and understanding network security |
| **Submission details** (if relevant) | **Due:** Week 6 as per the unit study guide  Insert your details on page 1 and sign the Student Declaration. Include this form with your submission.  Submit the listed files below as per the instructions in the Connect online learning system stated on the Assessment Task 1 page.  You are to submit the following files:  1. ICTNWK539\_540\_AT2\_Part1\_yourname.docx  2. ICTNWK539\_540\_AT2\_Part2\_yourname (MS project or Excel format)  3. ICTNWK539\_540\_Test\_Plan\_yourname.docx  4. ICTNWK539\_540\_Project\_approval\_yourname.docx  Assessment to be submitted via  TAFE Queensland Learning Management System (Connect): [*https://connect.tafeqld.edu.au/d2l/login*](https://connect.tafeqld.edu.au/d2l/login)  Username; 9 digit student number  For password resets go to: [*https://passwordreset.tafeqld.edu.au/default.aspx*](https://passwordreset.tafeqld.edu.au/default.aspx) |

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| **Instructions to Assessor** | Student will require:  Computer applications currently used in industry  Support resources, including online, manuals and training booklets  A computer system with a suitable current OS and access to the internet  Work, Health and Safety:  TAFE Queensland student rules are designed to ensure that learners are aware of their rights as well as their responsibilities. All learners are encouraged to familiarise themselves with the TAFE Queensland student rules, specifically as they relate to progress of study and assessment guidelines.  Student rules: <http://tafeqld.edu.au/current-students/student-rules/>  Level of Assistance:  Teachers and tutors should be available in class, and accessible by email for students working from home. Staff cannot directly show students answers but guide them to where to go to complete tasks individually. The teacher will make reasonable adjustment for students, as and when appropriate, after consultation with the Disability and Counselling team.  Assessment Criteria:  See Marking Criteria on Connect  Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.  Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. |
| **Note to Student** | An overview of all Assessment Tasks relevant to this unit is located in the Unit Study Guide. |

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| CaseStudy-01 | Case study |
| Client’s Details   |  |  | | --- | --- | | Company Name: | Anzac Airport | | Contact Name: | David Edwards, IT Manager  Sharon Tate, Airport CEO | | Address: | Anzac Airport Drive, Mytown, QLD, 4655 | | Email: | david.edwards4655@gmail.com.au |   Anzac Airport is a small private airport which provides passenger and freight services for local clients and businesses. Anzac Airport must be compliant with all commonwealth and state laws and regulations regarding airport facilities and operations. The organizational structure of Anzac Airport consists of three departments which support five areas of operational activity:   1. Office Operations – Administration (including management) and Finance   CEO, CFO, Administration Manager, 2x receptionists, 4x administration officers, Human Resource officer, WHS Officer   1. Information and Technology   IT Manager, 2x IT technicians   1. Ground Operations – Security and Airport Operations.   Operations Manager, Security Manager, 6x tarmac / baggage handlers (2x PCs), 6x security staff (3x PCs)  All staff have access to a computer, except where noted.  The **Information Technology team** is under the Information and Technology department. They currently spend 80% to 90% of their time dealing with a constant stream of desktop support issues.  **202X IT Budget**  Staff salaries and professional development $230,000  Hardware purchases $140,000  Software Purchases $140,000  There is limited flexibility in this budget, but the overall budget of $510,000 for the year must adhered to. | |

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| **Responsibilities of the Information Technology department**  Internet access  Wi-Fi  Voice over IP  Local Area Networks  Desktop computers in administration offices  Video conference facilities  Corporate information systems: Payroll, Email, Personnel, Records management  Security – physical and systems  **Current Configuration:**  There are no servers, only peer-to-peer networks in each department  Wired LAN is 10/100 Ethernet with an ad-hoc topology  The storage of files on staff computers is unstable and unreliable  Calculated storage capacity across the departments is:   |  |  |  | | --- | --- | --- | | **Department** | **Section** | **Mbyte** | | Office Operations | General organisation files and template | 1200 | |  | Client files | 12000 | |  | Human Resources and WHS | 3500 | |  | Finance | 4500 | |  | Management | 1800 | |  |  |  | | Information and Technology | Reports and general documentation | 2500 | |  |  |  | | Ground Operations | Manager | 1800 | |  | Security | 25000 | |  | Tarmac operation documentation | 9500 |   With the industry rebounding after a difficult period, it has been noted that increase in data is larger than before and the estimate is that data will grow at 20% each 12 months.  The desktop computers in the admin areas have several different operating systems installed  Office Operations – Dell OptiPlex desktops 2-year-old 8GB, 250GB SSD, MS Windows 10 Home  Information Technology – Dell OptiPlex desktops 4-year-old 8GB, 250GB SSD, MS Windows 10 Pro  Ground Operations – Dell OptiPlex desktops 6-year-old 4GB, 200GB HDD, MS Windows 8.1 Pro  The company pays an Internet service provider to host web services  Staff members use email rarely; all mailboxes are at internet sites such as Gmail  The internet works for admin staff only. Wi-Fi is used by IT staff only  One member of the IT team has been experimenting with VOIP but no implementation yet  **Business Needs:**  The CEO is concerned that the old technology is costing them money and has decided that it is time to upgrade  The IT Manager has stated that the company wants to introduce a Microsoft LAN for administration staff and customers  Full wireless integration  On-site email services, FTP, and web services  Domain services to run on a Microsoft server  File storage and email services and to run on separate servers  An additional $20,000 has been allocated for network improvements  The IT team has been asked to devise a strategic plan for growth of the IT infrastructure  The new IT infrastructure must be based on clearly defined business requirements  Introduce Linux based servers  **Technical Requirements:**  The clients are currently using a peer-to-peer network design which needs to be replaced by an up-to-date Ethernet client/server network  Many staff members complain that the peer-to-peer network is too slow, the network needs to be more reliable  The CEO has stated that she wants ‘State-of-the-art’ technology on every desk  Error messages on desktop workstations suggest that memory and disk upgrades are needed  All Microsoft operating systems on both servers and workstations need to be upgraded to current versions where required  The proposed server & network must be agile and redundant (easily recoverable – think server clustering)  Single sign on authentication must be configured so that anyone logging on to the network will be able to access all resources  The CEO has heard about virtual server platforms and stated that he is interested in exploring this option as well  At least one of mail, WEB or FTP services run on Linux based server and proxy and NTP run on Linux based servers  File sharing between Linux and Windows server  **Company Policies:**   1. Anzac Airport’s commitment to professionalism, ethical practices, equity, and social accountability implies a duty of care in relation to the use of information resources. Finite resources are applied to information facilities, and their use for business purposes must not be diminished by use for other purposes. Anzac Airport also values its reputation, including that which is conveyed on information networks. Therefore, we are committed to procedures which: 2. monitor the quality of information on computer networks 3. make users aware of company policy on the use of information resources 4. lead to action arising from such monitoring through as appropriate. Misuse is dealt with through performance management and/or staff misconduct processes, depending on the nature of the breach in question 5. routinely logs network activity and may use this information to investigate faults, security breaches and unlawful activity 6. Members of the Information Technology team are responsible for: 7. data quality - accuracy, integrity, cleanliness, correctness, completeness, consistency, and timeliness. 8. data security - control of access to data sets to known individuals and monitoring of the data's subsequent exposure as it flows through corporate systems and records. 9. data standards - ensuring compliance with relevant laws, government and regulatory standards and any policies and standards imposed internally. 10. data management - definition of the authoritative source of data and of the data to be provided from that source and ensuring that duplication of data is kept to a minimum. 11. Members of the Information Technology team are to monitor and evaluate business processes to ensure that these are consistent with best practice principles for data management and are responsible for approval of the 'rules' which are used to determine user access to information resources and services (though this approval can be delegated to another officer in the business area). 12. The company will endeavour to align IT operations with specific business goals and objectives, company vision, and long-term strategies. 13. The company will apply standards in their use of technology to assure ease of support and the effective application of hardware and software to core systems. 14. The procurement of technology will be based on a comprehensive assessment of vendor offerings. All purchases in excess of $2000 must have at least 3 separate vendor quotes.   **Your Role**  The Anzac Airport Information Technology team has requested the services of Uptown IT due to the depth of knowledge and experience your organisation has. As a senior IT consultant with Uptown IT, management has requested that you take a lead role in helping the client meet their goals. |

# PART 1 – Project Proposal

Write a project proposal to the CEO, Anzac airport outlining following. Use the following template provided to complete the project proposal.

**The project proposal should include at least two integrated server design options**.

* ICTNWK539\_540\_Project\_Proposal\_Template.docx

This template has the following headings and sub headings and detailed guide lines for completing the project proposal.

**Introduction**

1. Gap Analysis

**Network Design Option 1**

1. Server Installation Plan
2. Number of servers including specifications
3. Types of servers, OS and their Roles
4. How would you install the Operating systems?
5. What are the compatibility concerns of your server integration, what will be the solution?
6. Network functionalities
7. DHCP
8. DNS
9. Directory services including authentication (AD DS)
10. Update services
11. Network installation of operating systems
12. Email, FTP and WEB services
13. Print management
14. Group Policies
15. Proxy Server
16. NTP
17. Network security
18. Server integration and authentication
19. Authentication
20. Authentication between different server platforms
21. High availability
22. File sharing
23. File sharing including file sharing between different file systems
24. Folder structure
25. Data migration and back up
26. Data Migration Strategy
27. Data backup plan
28. Fire walls and Virus protection
29. Identify Firewall options for network security
30. How do you implement virus protection?
31. Network prototype
32. Draw a prototype topology of your suggested network using an industry accepted schematic designing tool

**Network Design Option 2**

1. Server Installation Plan
2. Number of servers including specifications
3. Types of servers, OS and their Roles
4. How would you install the Operating systems?
5. What are the compatibility concerns of your server integration, what will be the solution?
6. Network functionalities
7. DHCP
8. DNS
9. Directory services including authentication (AD DS)
10. Update services
11. Network installation of operating systems
12. Email, FTP and WEB services
13. Print management
14. Group Policies
15. Proxy Server
16. NTP
17. Network security
18. Server integration and authentication
19. Authentication
20. Authentication between different server platforms
21. High availability
22. File sharing
23. File sharing including file sharing between different file systems
24. Folder structure
25. Data migration and back up
26. Data Migration Strategy
27. Data backup plan
28. Fire walls and Virus protection
29. Identify Firewall options for network security
30. How do you implement virus protection?
31. Network prototype topology
32. Draw a prototype topology of your suggested network using an industry accepted schematic designing tool

Save the document as:

**ICTNWK539\_540\_AT2\_Part1\_yourname.docx**

*Further details of the**two design aspects are given below.*

## GAP Analysis

Outline the current network configuration, research, and determine the emerging solution for each of the issue the client is facing. Please note your solutions need to be specific.

## Server installation plan

You will now need to decide number of servers and operating systems that you are going to install in the network infrastructure. Address the following under your server installation plan:

1. Number of servers including specifications
2. Types of servers, OS and their Roles
3. How would you install the Operating systems of servers and workstations?
4. What are the compatibility concerns of your server integration, what will be the solution?

## Network functionalities

Describe the server roles and applications that you are going to install and configure in Anzac network. Describe in detail what are the functionalities of each server role is.

These server roles, services and applications should include but not limited to:

1. Dynamic address configuration (DHCP)
2. Domain name translation (DNS)
3. Directory services including authentication (AD DS)
4. Update services (OS patching)
5. Network installation of operating systems
6. Communication email, FTP, and web services
7. Print management
8. Group policies
9. proxy server
10. NTP server

## Network security

Identify and describe at least four security technologies you are going to implement for Anzac Airport to secure the network infrastructure. Consider available technologies with your operating system.

The following are some of the options to consider:

1. Server integration and authentication
2. What is the authentication model suggested in your network design?
3. How will you use the above model to authenticate users between different server platforms (OS) in your server integration that meets the organisation’s network requirements?
4. Explain how redundancy and replication can be applied to the authentication model
5. File sharing
6. Describe your file sharing strategy and how file sharing can be done between different operating systems, for Anzac Airport including file permissions, consider the integrated server environment when you plan.
7. Produce a diagram that shows the partitions that need to be created, and the file and folder systems that are needed.
8. Data migration and backup requirements
9. Identify data migration and data backup and recovery requirements before new network installation.
10. Consider continuous confidentiality, integrity, and availability of Anzac Airport’s data during the network installation.
11. Firewalls and Virus protection
12. Identify Firewall options for network security
13. How do you implement virus protection?
14. Network prototype

Draw a prototype of your suggested network using an industry accepted schematic designing tool.

## Test plan

Using the template **ICTNWK539\_540\_Test\_Plan\_Template.docx**, develop a test plan of the suggested Anzac Airport network to test:

1. Connectivity
2. Performance
3. Availability

Save the document as:

**ICTNWK539\_540\_Test\_Plan\_yourname.docx**

## Plan Approval

Client (teacher) to review and approval the project proposal with:

1. A clear statement of review and approval
2. Signature area that is signed and dated

Save the document as:

**ICTNWK539\_540\_Project\_approval\_yourname.docx**

# PART 2 – Task Scheduling

Use a task scheduling utility such as Microsoft Project or Microsoft Excel to create a scheduling plan for your installation.

The schedule should:

1. break the whole project into stages
2. create manageable tasks within each stage
3. assign sufficient time, including network downtimes, and resources (labour, material, and cost) to each task
4. based on labour, material and any other cost, produce a budget
5. review and approved by client (teacher) with signature area.

Save the document as:

**ICTNWK539\_540\_AT2\_Part2\_yourname**

# Submission checklist:

You are to submit the following files:

* ICTNWK539\_540\_AT2\_Part1\_yourname.docx
* ICTNWK539\_540\_AT2\_Part2\_yourname (MS project or Excel format)
* ICTNWK539\_540\_Test\_Plan\_yourname.docx
* ICTNWK539\_540\_Project\_approval\_yourname.docx