# **Unit Assessment Pack (UAP) – Cover Sheet**

## **Student and Trainer/Assessor Details**

| **Student ID** |  |
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| **Student name** |  |
| **Contact number** |  |
| **Email address** |  |
| **Trainer/Assessor name** | . |

## **Course and Unit Details**

| **Course code** |  |
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| **Course name** |  |
| **Unit code** | ICTNWK504 |
| **Unit name** | Design and implement an integrated server solution |

## **Assessment Submission Method**

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| By hand to trainer/assessor | By email to trainer/assessor | Online submission via Learning Management System (LMS) |
| By Australia Post to RTO | Any other method \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Please mention here) | |

**Student Declaration**

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| * I certify that the work submitted for this assessment pack is my own. I have clearly referenced any sources used in my submission. I understand that a false declaration is a form of malpractice; * I have kept a copy of this assessment pack and all relevant notes, attachments, and reference material that I used in the production of the assessment pack; * For the purposes of assessment, I give the trainer/assessor of this assessment the permission to:   + Reproduce this assessment and provide a copy to another member of staff; and   + Take steps to authenticate the assessment, including communicating a copy of this assessment to a checking service (which may retain a copy of the assessment on its database for future plagiarism checking).   Student signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_\_\_/\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

## **Assessment Plan**

To demonstrate competence in this unit, you must be assessed as satisfactory in each of the following assessment tasks.

| **Evidence recorded** | **Evidence Type/ Method of assessment** | | | **Sufficient evidence recorded/Outcome** |
| --- | --- | --- | --- | --- |
| **Unit Assessment Task 1** | Unit Knowledge Test (UKT) | | | S / NS (First Attempt)  S / NS (Second Attempt) |
| **Unit Assessment Task 2** | Unit Project (UP) | | | S / NS (First Attempt)  S / NS (Second Attempt) |
| **Unit Assessment Task 3** | Unit Project (UP) | | | S / NS (First Attempt)  S / NS (Second Attempt) |
| **Final result** | C/NYC | **Date assessed** |  | |
| **Trainer/Assessor Signature** |  | |

## **Assessment Conditions**

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| **Unit purpose/application** |

This unit describes the skills and knowledge required to design and implement a network authentication model that allows users to log in using the same user credentials between multiple operating system platforms to provide a secure method of sharing files on the same network.

It applies to individuals employed in network or systems engineering roles where they are required to support multiple operating systems in a complex computing environment of medium-to-large organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

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| **What the student can expect to learn by studying this unit of competency** |

* Prepare for the design and installation of an integrated server solution
* Plan and design integrated server solution
* Install and configure the integrated server solution
* Test and reconfigure network servers
* Complete and document network design and installation

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| **Training and assessment resources required for this unit of competency** |

* The student will have access to the following:
* Learner guide
* PowerPoint presentation
* Unit Assessment Pack (UAP)
* Access to other learning materials such as textbooks

The resources required for these assessment tasks also included:

* A site where server installation may be conducted
* Relevant server specifications such as:
* multiple operating system platforms
* cabling
* Networked (LAN) computers
* Server diagnostic software
* Switching equipment
* Client requirements
* Workstations
* Relevant regulatory documentation that affects installation activities.

Your trainer/assessor will confirm assessment submission details for each assessment task.

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| **Academic integrity, plagiarism and collusion** |

**Academic Integrity**

Academic Integrity is about the honest presentation of your academic work. It means acknowledging the work of others while developing your own insights, knowledge and ideas.

As a student, you are required to:

* undertake studies and research responsibly and with honesty and integrity
* ensure that academic work is in no way falsified
* seek permission to use the work of others, where required
* acknowledge the work of others appropriately
* take reasonable steps to ensure other students cannot copy or misuse your work.

**Plagiarism**

Plagiarism means to take and use another person's ideas and or manner of expressing them and to pass them off as your own by failing to give appropriate acknowledgement. This includes material sourced from the internet, RTO staff, other students, and from published and unpublished work.

Plagiarism occurs when you fail to acknowledge that the ideas or work of others are being used, which includes:

* Paraphrasing and presenting work or ideas without a reference
* Copying work either in whole or in part
* Presenting designs, codes or images as your own work
* Using phrases and passages verbatim without quotation marks or referencing the author or web page
* Reproducing lecture notes without proper acknowledgement.

**Collusion**

Collusion means unauthorised collaboration on assessable work (written, oral or practical) with other people. This occurs when a student presents group work as their own or as the work of someone else.

Collusion may be with another RTO student or with individuals or students external to the RTO. This applies to work assessed by any educational and training body in Australia or overseas.

Collusion occurs when you work without the authorisation of the teaching staff to:

* Work with one or more people to prepare and produce work
* Allow others to copy your work or share your answer to an assessment task
* Allow someone else to write or edit your work (without rto approval)
* Write or edit work for another student
* Offer to complete work or seek payment for completing academic work for other students.

Both collusion and plagiarism can occur in group work. For examples of plagiarism, collusion and academic misconduct in group work please refer to the RTO’s policy on Academic integrity, plagiarism and collusion.

Plagiarism and collusion constitute cheating. Disciplinary action will be taken against students who engage in plagiarism and collusion as outlined in RTO’s policy.

Proven involvement in plagiarism or collusion may be recorded on students’ academic file and could lead to disciplinary action.

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| **Other Important unit specific Information** |

N/A

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| **Unit outcome** |

* This unit is not graded and the student must complete and submit all requirements for the assessment task for this cluster or unit of competency to be deemed competent.
* Students will receive a 'satisfactorily completed' (S) or 'not yet satisfactorily completed (NS) result for each individual unit assessment task (UAT).
* Final unit result will be recorded as competency achieved/competent (C) or competency not yet achieved/not yet competent (NYC).

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| **Prerequisite/s** |

Nil

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| **Co-requisite/s** |

Nil

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| **Foundation Skills** |

The Foundation Skills describe those required skills (learning, oral communication, reading, writing, numeracy, digital technology and employment skills) that are essential to performance. Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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| **Relevant Legislation** |

* Australian Human Rights Commission Act 1986
* Age Discrimination Act 2004
* Disability Discrimination Act 1992
* Racial Discrimination Act 1975
* Sex Discrimination Act 1984
* The Privacy Act 1988 (Privacy Act) and Australian Privacy Principles (APPs)
* Occupational Health and Safety Act 2004
* Work Health and Safety Act 2011

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| **Principles of assessment and rules of evidence** |

All assessment tasks will ensure that the principles of assessment and rules of evidence are adhered to.

The principles of assessment are that assessment must be valid, fair, flexible, reliable and consistent. The rules of evidence state that evidence must be sufficient, valid, current and authentic.

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| **AQF Level** |

AQF levels and the AQF levels criteria are an indication of the relative complexity and/or depth of achievement and the autonomy required to demonstrate that achievement.

All assessment tasks must ensure compliance with the requirements of AQF level and the AQF level criteria. For more information, please visit <http://www.aqf.edu.au/>

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| **Further Information** |

For further information about this unit go to [https://training.gov.au/Training/Details/ICT](https://training.gov.au/Training/Details/ICTNWK608)NWK504

## **Additional Information**

* This information will be managed by the provisions of the Privacy Act and the Freedom of Information Act.)
* Students are required to satisfactorily complete and submit all assessment tasks that contribute to the assessment for a unit.
* Students will be provided with one more attempt to complete this Unit assessment pack (UAP) if trainer/assessor deems them not satisfactorily completed (NS) in any Unit assessment task (UAT).
* Unit Pre-Assessment Checklist (UPAC) will be reviewed by the trainer/assessor to ensure the student is ready for the assessment.
* Feedback regarding this Unit Assessment Pack (UAP) can be emailed to the [compliance](mailto:info@caqa.online) and quality assurance department/administration department in your RTO for continuously improving our assessment and student resources.

## **Feedback to student**

Feedback on students’ assessment performance is a vital element in their learning. Its purpose is to justify to students how their competency was assessed, as well as to identify and reward specific qualities in their work, to recommend aspects needing improvement, and to guide students on what steps to take.

Feedback defines for students what their trainer/assessor thinks is important for a topic or a subject. At its best, feedback should:

* Be provided for each Unit Assessment Task (UAT)
* Guide students to adapt and adjust their learning strategies
* Guide trainers/assessors to adapt and adjust teaching to accommodate students’ learning needs
* Be a pivotal feature of learning and assessment design, not an add-on ritual
* Focus on course and unit learning outcomes
* Guide students to become independent and self-reflective learners and their own critics
* Acknowledge the developmental nature of learning.

*If students have not received proper feedback, they must speak to compliance and quality assurance department/administration department in the RTO/person responsible for looking after the quality and compliance services of the RTO.*

*For more information, please refer to RTO Student Handbook.*

# **Unit Pre-Assessment Checklist (UPAC)**

# **UAT 1 – Unit Knowledge Test (UKT)**

## **Purpose of the checklist**

The pre-assessment checklist helps students determine if they are ready for assessment. The trainer/assessor must review the checklist with the student before the student attempts the assessment task. If any items of the checklist are incomplete or not clear to the student, the trainer/assessor must provide relevant information to the student to ensure they understand the requirements of the assessment task. The student must ensure they are ready for the assessment task before undertaking it.

**Section 1: Information for Students**

* Please make sure you have completed the necessary prior learning before attempting this assessment.
* Please make sure your trainer/assessor clearly explained the assessment process and tasks to be completed.
* Please make sure you understand what evidence is required to be collected and how.
* Please make sure you know your rights and the Complaints and Appeal process.
* Please make sure you discuss any special needs or reasonable adjustments to be considered during the assessment (refer to the Reasonable Adjustments Strategy Matrix and negotiate these with your trainer/assessor).
* Please make sure that you have access to a computer and the internet (if you prefer to type the answers).
* Please ensure that you have all the required resources needed to complete this Unit Assessment Task (UAT).
* Due date of this assessment task is according to your timetable.
* In exceptional (compelling and compassionate) circumstances, an extension to submit an assessment can be granted by the trainer/assessor.
* Evidence of the compelling and compassionate circumstances must be provided together with your request for an extension to submit your assessment work.
* Request for an extension to submit your assessment work must be made before the due date of this assessment task.

## **Section 2: Reasonable adjustments**

* Students with carer responsibilities, cultural or religious obligations, English as an additional language, disability etc. can request for reasonable adjustments.
* Please note, academic standards of the unit/course will not be lowered to accommodate the needs of any student, but there is a requirement to be flexible about the way in which it is delivered or assessed.
* The Disability Standards for Education requires institutions to take reasonable steps to enable the student with a disability to participate in education on the same basis as a student without a disability.
* Trainer/Assessor must complete the section below “Reasonable Adjustment Strategies Matrix” to ensure the explanation and correct strategy have been recorded and implemented.
* Trainer/Assessor must notify the administration/compliance and quality assurance department for any reasonable adjustments made.
* All evidence and supplementary documentation must be submitted with the assessment pack to the administration/compliance and quality assurance department.

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| **Reasonable Adjustment Strategies Matrix (Trainer/Assessor to complete)** | | |
| **Category** | **Possible Issue** | **Reasonable Adjustment Strategy**  **(select as applicable)** |
| 🞎 LLN | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Confidence | 🞎 Verbal assessment  🞎 Presentations  🞎 Demonstration of a skill  🞎 Use of diagrams  🞎 Use of supporting documents such as wordlists |
| 🞎 Non-English Speaking Background | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Cultural background  🞎 Confidence | 🞎 Discuss with the student and supervisor (if applicable) whether language, literacy and numeracy are likely to impact on the assessment process  🞎 Use methods that do not require a higher level of language or literacy than is required to perform the job role  🞎 Use short sentences that do not contain large amounts of information  🞎 Clarify information by rephrasing, confirm understanding  🞎 Read any printed information to the student  🞎 Use graphics, pictures and colour coding instead of, or to support, text  🞎 Offer to write down, or have someone else write, oral responses given by the student  🞎 Ensure that the time available to complete the assessment, while meeting enterprise requirements, takes account of the student’s needs |
| 🞎 Indigenous | 🞎 Knowledge and understanding  🞎 Flexibility  🞎 Services  🞎 Inappropriate training and assessment | 🞎 Culturally appropriate training  🞎 Explore understanding of concepts and practical application through oral assessment  🞎 Flexible delivery  🞎 Using group rather than individual assessments  🞎 Assessment through completion of practical tasks in the field after demonstration of skills and knowledge. |
| 🞎 Age | 🞎 Educational background  🞎 Limited study skills | 🞎 Make sure font size is not too small  🞎 Trainer/Assessor should refer to the student’s experience  🞎 Ensure that the time available to complete the assessment takes account of the student’s needs  🞎 Provision of information or course materials in accessible format.  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note-taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |
| 🞎 Educational background | 🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Discuss with the Student previous learning experience  🞎 Ensure learning and assessment methods meet the student’s individual need |
| 🞎 Disability | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Identify the issues  🞎 Create a climate of support  🞎 Ensure access to support that the student has agreed to  🞎 Appropriately structure the assessment  🞎 Provide information or course materials in accessible format, e.g. a textbook in braille  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note- taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |
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| **Explanation of reasonable adjustments strategy used (If required)** |
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# **Unit Assessment Task (UAT)**

## **Assessment Task 1 - Unit Knowledge Test (UKT)**

**Assessment type:**

* Written Questions

**Assessment task description:**

* This is the first (1) unit assessment task you have to successfully complete to be deemed competent in this unit of competency.
* The Unit Knowledge Test is comprised of twenty one (21) written questions
* You must respond to all questions and submit them to your Trainer/Assessor.
* You must answer all questions to the required level, e.g. provide the number of points, to be deemed satisfactory in this task
* You will receive your feedback within two weeks - you will be notified by your Trainer/Assessor when results are available.

**Applicable conditions:**

* All knowledge tests are untimed and are conducted as open book tests (this means you are able to refer to your textbook during the test).
* You must read and respond to all questions.
* You may handwrite/use computers to answer the questions.
* You must complete the task independently.
* No marks or grades are allocated for this assessment task. The outcome of the task will be Satisfactory or Not Satisfactory.
* As you complete this assessment task you are predominately demonstrating your written skills and knowledge to your trainer/assessor.
* The trainer/assessor may ask you relevant questions on this assessment task to ensure that this is your own work.

**Resubmissions and reattempts:**

* Where a student’s answers are deemed not satisfactory after the first attempt, a resubmission attempt will be allowed.
* You must speak to your Trainer/Assessor if you have any difficulty in completing this task and require reasonable adjustments (e.g. can be given as an oral assessment)
* For more information, please refer to your RTO Student Handbook.

**Location:**

* This assessment task may be completed in a learning management system (i.e. Moodle) or independent learning environment.
* Your trainer/assessor will provide you further information regarding the location for completing this assessment task.

**Instructions for answering written questions:**

* Complete a written assessment consisting of a series of questions.
* You will be required to correctly answer all the questions.
* Do not start answering questions without understanding what is required from you. Read the questions carefully and critically analyse them for a few seconds, this will help you to identify what is really needed.
* Your answers must demonstrate an understanding and application of relevant concepts, critical thinking, and good writing skills.
* Be concise to the point and write answers according to the given word-limit to each question and do not provide irrelevant information. Be careful, quantity is not quality.
* Be careful to use non-discriminatory language. The language used should not devalue, demean, or exclude individuals or groups on the basis of attributes such as gender, disability, culture, race, religion, sexual preference or age. Gender inclusive language should be used.
* When you quote, paraphrase, summarise or copy information from the sources you are using to write your answers/research your work, you must always acknowledge the source.

**How your trainer/assessor will assess your work?**

* This assessment task requires the student to answer all the questions.
* Answers must demonstrate the student’s understanding and knowledge of the unit.
* If all assessment tasks are deemed Satisfactory (S), then the unit outcome is Competent (C).
* If at least one of the assessment task is deemed Not Satisfactory (NS), then the unit outcome is Not Yet Competent (NYC).
* Once all assessment tasks allocated to this Unit of Competency have been undertaken, trainer/assessor will complete an Assessment plan to record the unit outcome. The outcome will be either Competent (C) or Not Yet Competent (NYC).
* The “Assessment Plan” is available with the Unit Assessment Pack (UAP) – Cover Sheet.

**Purpose of the assessment task:**

* The purpose of this assessment task is to assess the students’ knowledge required for the designing and implementation of an integrated server solution.

**Assessment Task 1 - Unit Knowledge Test (UKT)**

**Instructions:**

* This is an individual assessment.

The purpose of this assessment task is to assess the students’ knowledge required to ensure secure file encryption is selected, implemented and monitored on a computer network or local environment.

* To make full and satisfactory responses you should consult a range of learning resources, other information such as handouts and textbooks, learners’ resources and slides.
* All questions must be answered in order to gain competency for this assessment.
* You may attach a separate sheet if required.
* You must include the following particulars in the footer section of each page of the attached sheets:
  + Student ID or Student Name
  + Unit ID or Unit Code
  + Course ID or Course Code
  + Trainer and assessor name
  + Page numbers
* You must staple the loose sheets together along with the cover page.
* You must attach the loose sheets chronologically as per the page numbers.
* Correction fluid and tape are not permitted. Please do any corrections by striking through the incorrect words with one or two lines and rewriting the correct words.

Resources required to complete the assessment task:

* Learner guide
* PowerPoint presentation
* Unit Assessment Pack (UAP)
* Access to other learning materials such as textbooks
* Access to a computer, the Internet and word-processing system such as MS Word.

1. Summarise the following authentication method and protocol:
   * + 1. Lightweight directory access protocol (LDAP)
       2. Kerberos.
       3. RADIUS

Write your response in 100-150 words for each.

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| 1. ***Lightweight directory access protocol***   ***The Lightweight Directory Access Protocol (LDAP) is a set of open protocols used to access centrally stored information over a network. It is based on the X.500 standard for directory sharing, but is less complex and resource-intensive. For this reason, LDAP is sometimes referred to as "X.500 Lite." The X.500 standard is a directory that contains hierarchical and categorized information, which could include information such as names, addresses, and phone numbers.***  ***LDAP is a client/server system. The server can use a variety of databases to store a directory, each optimized for quick and copious read operations. When an LDAP client application connects to an LDAP server, it can either query a directory or attempt to modify it. In the event of a query, the server either answers the query locally, or it can refer the querent to an LDAP server which does have the answer. If the client application is attempting to modify information within an LDAP directory, the server verifies that the user has permission to make the change and then adds or updates the information.***  ***Reference:*** Web.mit.edu. 2020. *Chapter 24. Lightweight Directory Access Protocol (LDAP)*. [online] Available at: <https://web.mit.edu/rhel-doc/5/RHEL-5-manual/Deployment\_Guide-en-US/ch-ldap.html> [Accessed 24 October 2020].   1. ***Kerberos***   ***Kerberos is a computer network security protocol that authenticates service requests between two or more trusted hosts across an untrusted network, like the internet. It uses secret-key cryptography and a trusted third party for authenticating client-server applications and verifying users' identities.***  ***Initially developed by the Massachusetts Institute of Technology (MIT) for Project Athena in the late '80s, Kerberos is now the default authorization technology used by Microsoft Windows. Kerberos implementations also exist for other operating systems such as Apple OS, FreeBSD, UNIX, and Linux.***  ***The protocol derives its name from the legendary three-headed dog Kerberos (also known as Cerberus) from Greek myths, the canine guardian to the entrance to the underworld. Kerberos had a snake tail and a particularly bad temper and, despite one notable exception, was a very useful guardian.***  ***But in the protocol's case, the three heads of Kerberos represent the client, the server, and the Key Distribution Center (KDC). The latter functions as the trusted third-party authentication service.***  ***Users, machines, and services that use Kerberos depend on the KDC alone, which works as a single process that provides two functions: authentication and ticket-granting. KDC "tickets" offer authentication to all parties, allowing nodes to verify their identity securely. The Kerberos authentication process employs a conventional shared secret cryptography that prevents packets traveling across the network from being read or altered, as well as protecting messages from eavesdropping and replay (or playback) attacks.***  ***Reference:*** Simplilearn.com. 2020. *What Is Kerberos, How Does It Work, And What Is It Used For?*. [online] Available at: <https://www.simplilearn.com/what-is-kerberos-article> [Accessed 24 October 2020].   1. ***RADIUS***   ***RADIUS, which stands for "Remote Authentication Dial In User Service", is a network protocol which controls user network access via authentication and accounting. Commonly used by Internet Service Providers (ISPs), cellular network providers, and corporate and educational networks, the RADIUS protocol serves three primary functions:***   * ***Authenticates users or devices before allowing them access to a network*** * ***Authorizes those users or devices for specific network services*** * ***Accounts for the usage of those services***   ***The RADIUS protocol is generally hidden inside of controlled networks, and is not seen directly by end users. i.e. it is run between trusted systems in the network.***  ***Reference:***  Networkradius.com. 2020. *The RADIUS Protocol | Freeradius Documentation*. [online] Available at: <https://networkradius.com/doc/3.0.10/introduction/RADIUS.html> [Accessed 24 October 2020]. |

1. What are the four (4) latest network operating systems (NOS)? Write 30-60 words for each of the network operating system.

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| ***A network operating system (NOS) is a computer operating system (OS) that is designed primarily to support workstations, personal computers and, in some instances, older terminals that are connected on a local area network (LAN). The software behind a NOS allows multiple devices within a network to communicate and share resources with each other.***  ***The composition of hardware that typically uses a NOS includes a number of personal computers, a printer, a server and file server with a local network that connects them together. The role of the NOS is to then provide basic network services and features that support multiple input requests simultaneously in a multiuser environment.***  ***Some of the network operating systems are listed below as :***   1. ***Cumulus Networks***   ***Cumulus Linux is a Debian based Linux distribution that runs on a variety of commodity hardware. Cumulus is active in the Open Compute Project and contributed multiple projects back to the community.***   1. ***Open Network Linux***   ***Open Network Linux (ONL) is a Linux distribution for “bare metal” switches, that is, network forwarding devices built from commodity components. ONL uses ONIE to install onto on-board flash memory.***   1. ***Dell System***   ***FTOS was originally developed by Force10 Networks. Dell acquired Force10 and has continued to develop the NOS with new features. At the same time, Dell Networks has embraced partnerships with Cumulus and BigSwitch to sell Whitebrand (or britebox) switching using open network hardware for those customers who want choices for NOS on their hardware.***   1. ***Dent Linux Foundation***   ***DENT will utilize the Linux Kernel, Switchdev, and other Linux based projects as the basis for building a new standardized network operating system without abstractions or overhead. All underlying infrastructure — including ASIC and Silicon for networking and datapath — will be treated equally; while existing abstractions, APIs, drivers, low-level overhead, and other open software will be simplified. DENT will unite silicon vendors, ODMs, SIs, OEMs, and end users across all verticals and enable the transition to disaggregated networks.***  ***Reference:*** SearchNetworking. 2020. *What Is A Network Operating System? - Definition From Whatis.Com*. [online] Available at: <https://searchnetworking.techtarget.com/definition/network-operating-system> [Accessed 24 October 2020]. |

1. Summarise the following:
2. Three (3) current server applications
3. Two (2) Windows Server 2016 compatibility issues and their resolution procedures.

Write 100-150 words for each answer.

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| 1. ***Servers are designed for nearly every purpose imaginable, from email to applications. Every application will have specific server requirements, typically designed to run on Windows NT or 2000, Novell Netware, or Linux. Many servers can run multiple applications to serve a variety of needs. As your network grows, you will find uses for a variety of specialized server applications. Some of the servers and their application are listed below:***  * ***File and Print Servers***   ***File and print servers are typically combined on one server and perform as part of the network operating system. File and printer servers manage the storage of data and the various printers on the network. These servers regulate and monitor access to these resources.***   * ***Groupware and Mail Servers***   ***Groupware servers commonly incorporate different tools for helping users collaborate, including email; managing calendars and contacts; group meeting scheduling; and other operations. When used to manage email, groupware servers manage both local (within your network) and global (Internet-wide) electronic messaging.***   * ***Web Servers***   ***Web servers allow Internet users to attach to your server to view and maintain Web pages. Web browsers such as Netscape and Internet Explorer request documents from the Web server using standard protocols, and the Web server retrieves the requested documents and forwards them on to the browsers. Web servers support a variety of technologies including CGI scripts, Active Server Pages, and secure connections to extend the power beyond the basic HTML code.***  ***Reference:***  Connectingup.org. 2020. *Networks 101: An Introduction To Server Applications | Connecting Up*. [online] Available at: <https://www.connectingup.org/learn/articles/networks-101-introduction-server-applications> [Accessed 27 October 2020].   1. ***Some of the issues of windows server 2016 and their resolution procedures are listed below:***  * ***Express updates available starting in November 2018***   ***Starting with the November 2018 Update Tuesday update, Windows will again publish Express updates for Windows Server 2016. If you're using WSUS and Configuration Manager you will once again see two packages for the Windows Server 2016 update: a Full update and an Express update. If you want to use Express for your server environments, you need to confirm that the server has taken a full update since November 2017 (KB# 4048953) to ensure the Express update installs correctly. If you attempt an Express update on a server that hasn't been updated since the 2017 11B update (KB# 4048953), you'll see repeated failures that consume bandwidth and CPU resources in an infinite loop. If you get into this scenario, stop pushing the Express update, and instead push a recent Full update to stop the failure loop.***   * ***Remote Server Administration Tools (RSAT)***   ***If you're running a version of Windows 10 older than the Anniversary Update, and are using Hyper-V and virtual machines with an enabled virtual Trusted Platform Module (including shielded virtual machines), and then install the version of RSAT provided for Windows Server 2016, attempts to start those virtual machines will fail.***  ***To avoid this, upgrade the client computer to Windows 10 Anniversary Update (or later) prior to installing RSAT. If this has already occurred, uninstall RSAT, upgrade the client to Window 10 Anniversary Update, and then reinstall RSAT.***  ***Reference:***  Docs.microsoft.com. 2020. *Release Notes - Important Issues In Windows Server 2016*. [online] Available at: <https://docs.microsoft.com/en-us/windows-server/get-started/windows-server-2016-ga-release-notes> [Accessed 27 October 2020]. |

1. What are the eight (8) types of documentation required for a network?

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| ***Everybody agrees network documentation is extremely important, but there tends not to be a lot of agreement on what that documentation should include. The short answer is that it should include everything that’s relevant—but what that means varies between networks.***  ***The actual documents you need will vary depending on the network, but the following list shows the relative importance for a typical network.***   1. ***Layer 1 and Layer 2 Diagram*** 2. ***Layer 3 Diagram*** 3. ***Circuit number table*** 4. ***IP address allocation table*** 5. ***Rack layout Diagram*** 6. ***Wi-Fi Diagram*** 7. ***Cable plan*** 8. ***Routing protocol diagram***   ***Reference:*** Auvik Networks Inc. 2020. *Network Documentation Best Practices: What To Create & Why*. [online] Available at: <https://www.auvik.com/franklyit/blog/network-documentation-best-practices/> [Accessed 27 October 2020]. |

1. Explain Windows Server error, event logging and reporting. Write your answer in 200-250 words.

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1. Summarise the following each in 100-150 words.
2. File Management
3. Print Management

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| 1. ***File Management***   File Management refers to the process and act of creating an organized structure in which you store information for easy retrieval. Basically, it means you store your work in a location where you know that you can find it again at a later date if needed. Effective electronic file management skills are essential to becoming computer competent.  The two key components of File Management that must be mastered are:   * Having an Understanding of the “Big Picture” of File Management * Mastering the specific “how-to” of carrying out the Management of your Files   Planning out and thinking about how you want to organize your files is probably the most important step of File Management and is really no different than the planning process that is used when setting up a physical file cabinet. If you think about a file cabinet, the typical components you might find are:   1. The Cabinet 2. Hanging File Folders 3. Manilla Folders   The Cabinet is the main housing structure for everything you are filing. The Hanging File Folders group items in the cabinet based on broad categories. Finally, the Manilla Folders are used and kept within the Hanging file folders to house items of an even more specific nature.  For example, you may want to organize your pile of paperwork at home into a logical structure within a file cabinet. One category of paper that you have are your bills. Another category you need to file are your bank statements.  Reference:  W.sunybroome.edu. 2020. *File Management Overview*. [online] Available at: <http://w.sunybroome.edu/basic-computer-skills/functions/file\_management/3file\_management\_overview.html> [Accessed 25 October 2020].   1. ***Print Management***   Print Management is a snap-in in Microsoft Management Console (MMC) that enables you to install, view, and manage all of the printers in your organization from any computer running Windows Server. Print Management provides up-to-the-minute details about the status of printers and print servers on the network. You can use Print Management to install printer connections to a group of client computers simultaneously. Print Management can help you find printers that have an error condition by using filters. It can also send e-mail notifications or run scripts when a printer or print server needs attention. On printer models that provide a Web page, Print Management has access to more data, such as toner and paper levels, which you can manage from remote locations, if needed.  Reference: Printeradmin.com. 2020. *Print Management Guide - Step-By-Step Guide For Print Management | Printeradmin*. [online] Available at: <https://www.printeradmin.com/printer-management/print-management-console/> [Accessed 25 October 2020]. |

1. Summarise the following:

A. File System Security

B. Network file system (nfs)

C. Network file sharing.

Write 50-100 words for each.

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| 1. ***File System Security***   Whenever data is stored on physical media, it has the potential to become compromised. For example, secret notes between Napoleon and his generals were compromised and led, in part, to his defeat. Napoleon's secret notes were written on leather or paper and sent by fast riders. In a computer context, those secret notes are stored on a hard drive and either used locally or transmitted across a network to a friend, coworker, Internet site, or other location beyond your server or organization. Only the intended users can access and use the stored data in the system. There are lots of security mechanisms to secure the files stored in the servers.  Reference:  Etutorials.org. 2020. *Chapter 4. File System Security :: Securing Windows Server 2003 :: Server Administration :: Etutorials.Org*. [online] Available at: <https://etutorials.org/Server+Administration/securing+windows+server+2003/Chapter+4.+File+System+Security/> [Accessed 25 October 2020].   1. ***Network File System (NFS)***   Network File System (NFS) is a common file sharing protocol used mainly in UNIX and Linux environments. It could be considered the standard file sharing protocol for \*NIX systems. NFS works by exporting a file system from one machine and making it available to the network. Other systems use an NFS client to mount the exported file system at a mount point on their local file system. The exported file system is then accessible from the mount point as if it were part of the local file system.  NFS is a fairly simple way to share, or export, a file system from one machine and access it from another. Generally, we like NFS for facilitating all file sharing from the ESX service console, especially for VM backups. NFS is fast, native to the service console, and simple to use in scripts.  Reference: Sciencedirect.com. 2020. *Network File System - An Overview | Sciencedirect Topics*. [online] Available at: <https://www.sciencedirect.com/topics/computer-science/network-file-system> [Accessed 25 October 2020].   1. ***Network file Sharing***   Computer networks allow you to share information with co-workers and customers. Network file sharing allows sharing data files from one computer to another using a live network connection. It provides the easier way for sharing large amount of data from one device to another device. Microsoft Windows (and other network operating systems) contain features for file sharing. For example, Windows file folders can be shared through a local area network (LAN) or the Internet using any of several methods.  Reference:  FileCloud. 2020. *Network File Sharing- Secure Network File Sharing By Filecloud - Filecloud*. [online] Available at: <https://www.getfilecloud.com/network-file-sharing/> [Accessed 25 October 2020]. |

1. What are the three (3) high availability options for servers? Write 50-100 words for each.

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| A typical dedicated server is a powerful computer which is connected to a high-speed Internet connection, and housed in a state-of-the-art remote data center or optimized data facility.  A High Availability dedicated server is an advanced system equipped with redundant power supplies, a fully redundant network, RAID disk towers and backups, ensuring the highest uptime and the full reliability with no single point of failure.  Some of the High availability servers are listed below:   1. Ultra High Performance Dedicated Servers   High performance servers are high-end dedicated solutions with larger computing capacity, especially designed to achieve the maximum performance. They are an ideal solution to cater enterprise workloads.  A typical high performance dedicated server will consist of the following:   1. Single/Dual latest Intel Xeon E3 or E5 series processors. 2. 64GB to 256GB RAM. 3. Energy efficient and redundant power supply and cooling units 4. Offsite Backups. 5. 8 to 24 TB SATA II HDD with RAID 10 6. Load Balanced Dedicated Servers   The process of distributing incoming web traffic across a group of servers efficiently and without intervention is called Load Balancing.  A hardware or software appliance which provides this load balancing functionality is known as a Load Balancer.  A load balancer sits in front of your servers and routes the visitor requests across the servers. It ensures even distribution, i.e., all requests must be fulfilled in a way that it maximizes speed and capacity utilization of all servers and none of them is over or under-utilized.  When your customers visit your website, they are first connected to load balancer and the load balancer routes them to one of the web servers in your infrastructure. If any server goes down, the load balancer instantly redirects the traffic to the remaining online servers.  As web traffic increases, you can add new servers quickly and easily to the existing pool of load-balanced servers. When a new server is added, the load balancer will start sending requests to new server automatically. That’s right – there’s no user-intervention required.   1. Scalable Private Cloud   A scalable private cloud is a cloud-based system that gives you self-service, scalability, and elasticity through a proprietary architecture  Private clouds are highly scalable that means whenever you need more resources, you can upgrade them, be it memory, storage space, CPU or bandwidth.  It gives the best level of security and control making it an ideal solution for a larger business. It enables you to customise computer, storage and networking components to best suit custom requirements.  Reference: Home, Hosting, C. and Solutions, T., 2020. *Top 5 High Availability Dedicated Server Solutions*. [online] VPS Hosting Blog | VPS & Cloud Hosting | Windows Reseller. Available at: <https://www.accuwebhosting.com/blog/top-5-high-availability-dedicated-server-solutions/> [Accessed 25 October 2020].  . |

1. Explain network service configuration and network service security. Write 50-100 words for each.

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| ***Network Service can be configured per VRF and Service Engine Group. IP routing can be enabled by configuring Network Service of routing\_service service type.***  ***You can configure routing functionality per VRF basis. The existing functionality of routing and its associated information such as, enable\_routing, floating\_interface\_ip, enable\_vip\_on\_all\_interfaces, and Mac masquerade under SE group are grouped under routing\_service service type.***  ***Network Service can be configured only via CLI. The Network Service will be in effect on Active SE only if an interface of the corresponding VRF is present on Service Engine.***  ***Network security is a broad term that covers a multitude of technologies, devices and processes. In its simplest term, it is a set of rules and configurations designed to protect the integrity, confidentiality and accessibility of computer networks and data using both software and hardware technologies. Every organization, regardless of size, industry or infrastructure, requires a degree of network security solutions in place to protect it from the ever-growing landscape of cyber threats in the wild today.***  ***Today's network architecture is complex and is faced with a threat environment that is always changing and attackers that are always trying to find and exploit vulnerabilities. These vulnerabilities can exist in a broad number of areas, including devices, data, applications, users and locations. For this reason, there are many network security management tools and applications in use today that address individual threats and exploits and also regulatory non-compliance. When just a few minutes of downtime can cause widespread disruption and massive damage to an organization's bottom line and reputation, it is essential that these protection measures are in place.***  ***Reference:***  Forcepoint. 2020. *What Is Network Security?*. [online] Available at: <https://www.forcepoint.com/cyber-edu/network-security> [Accessed 25 October 2020]. |

1. Explain the operating system help and support utilities. Write your response in 100-150 words.

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| ***In any computer or mobile device, the operating system can be termed as the back bone when it comes to software. This is because it has to be there before other programs can be run. Like the name suggests, an operating system can be simply defined as the system that helps devices to operate effectively in a computer or mobile phone.***  ***In the early days of computing, the term “operating system” was primarily used to mean a computer operating system. However, with advancement of mobile phone technology, smart devices have come up with the capability to handle almost as much as a computer can handle. These mobile devices also have their own operating systems.***  ***The main reason for having an operating system in place is to manage the device’s hardware and software resources. In addition to this, the operating system provides the necessary common services for installed programs to run. It works as an intermediary between the hardware and any programs that are being run on the mobile device or computer.***  ***Some of the things that operating systems help accomplish include managing inputs from users, sending output to the output devices, management of storage spaces and control of peripheral devices. To better understand operating systems, look at the use of computer resources as a busy intersection. Things can get very messy if the intersection does not have traffic lights. Just like it is with the lights, an OS helps ensure that different users and programs access the available computing resources in an efficient manner.***  ***Without an operating system, every program will need a means to handle all computer components and hardware. This means that it will need a method to accept user inputs using keyboards and mice, to print documents, to read and write on storage devices, to keep track of time, to send output to the screen and even to communicate across a network. This would cause every single program to be very extensive and heavy.***  ***Reference :***  Cleverism. 2020. *What Is An Operating System (OS) And How Does It Work*. [online] Available at: <https://www.cleverism.com/operating-system-os-guide/> [Accessed 25 October 2020]. |

1. What are the four (4) Windows Server Performance monitoring tools and tuning options? Write 40-70 words for each.

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| ***Knowing the state of your network and server health is incredibly important for techs who want to optimize performance. Without insights into how your servers are performing, you increase the odds of encountering pesky software bugs or potential bottlenecks. That’s why it’s important to develop proactive server monitoring practices.***  ***Monitoring servers can be a tedious ordeal; applications must be checked for responsiveness, storage can’t run above capacity, and web servers must be constantly protected from external threats. Although some monitoring can be performed manually, human efforts are less efficient and in many cases can’t match what proper tools can do. If you want to help ensure your server monitoring provides granular insight into key metrics, it’s highly recommended you invest in professional server monitoring software.***  ***Not every software solution is built the same, so it’s important to invest in the right tool if you want to maintain optimal server health. Some of the windows server monitoring solutions are listed below:***   1. ***Windows Server Performance Software: SolarWinds AppOptics***   ***With AppOptics, it’s easy to get insight into the metrics you need. The dashboard supports a robust set of Windows server health information, from CPU and disk storage to IO and memory. It’s also possible to create and monitor custom parameters. What’s more, this software allows users to cross-reference infrastructure and server metrics. This means you can more quickly identify hot spots and mitigate bottlenecks before they affect your end users.***   1. ***Windows Log Management: SolarWinds Loggly***   ***Loggly is a cloud-based log aggregation tool built to support an array of servers, applications, and cloud-based logs. With Loggly, users can centralize their log data with the Windows syslog analyzer, which is quick to install and roll out.***  ***Loggly will store all Windows sylogs in a centralized location, making it easier to correlate events and resolve issues faster. And although Windows systems don’t natively support syslog data, Loggly allows you to use add-ons like NXLog to parse and send syslog data directly to the Loggly suite, letting you analyze it in comparison to other log metrics.***   1. ***Server Change Monitoring: Netwrix Community Edition***   ***Server configuration monitoring is an important practice for those who want to gain more visibility into their system and server changes. The inability to track user activity can leave your organization vulnerable to potential external and internal threats. That’s why it’s important to be able to see changes and compare configurations in real time.***  ***Netwrix Auditor Free Community Edition offers the ability to track changes and access events even in a hybrid cloud IT environment. With this visibility, IT teams don’t have to worry about missing critical changes to file server permissions, Windows server configurations, or other potential threats. And with Netwrix, you can automatically track all changes and access events on your servers and have any important information sent directly to the right tech’s mailbox, according to your schedule.***   1. ***Domain Controller Monitoring: Lepide DC Monitor***   ***Because domain controllers process security authentication requests, it’s important to keep them functioning well if you hope to avoid performance issues.***  ***Lepide DC Monitor is a free software tool designed to make domain controller monitoring easy. It enables users to monitor many different domain controllers all from a single UI. With the tool’s streamlined interface, it’s easier to determine the health and performance of individual domain controllers on a network. It’s built to monitor tons of helpful metrics, from memory and disk utilization to CPU and page reads.***  ***Reference:*** Software Reviews, Opinions, and Tips - DNSstuff. 2020. *Windows Server Monitoring And Optimization Tools You Should Know (And Use)*. [online] Available at: <https://www.dnsstuff.com/windows-server-monitoring-tools> [Accessed 25 October 2020]. |

1. Summarise the following

A. Task Management

B. Task Scheduling utilities

Write your response in 100-150 words for each.

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| 1. ***Task Management***   ***Task management is defined as the process of handling the entire life-cycle of a task, right from planning to tracking to execution. It helps teams track tasks from the beginning, setting deadlines, prioritizing tasks, and assigning them to the right people. It ensures projects stay on track and get completed on time.***  ***Task management, a part of project management is a pretty simple idea. It’s how you break complex projects into simple, bite-sized tasks so you can manage them quite easily.***  ***Task management enables teams to coordinate among themselves and to effectively complete tasks and eventually projects.***  ***Task management focuses on organizing tasks (that may be spread across multiple projects), prioritizing them, setting deadlines, and delegate tasks. Project Management is far more encompassing.***  ***In addition to task management, it also focuses on resource allocation, budgeting, and dependencies. Usually, task management capabilities are built within project management software.***  ***Reference:***  Kissflow. 2020. *What Is Task Management? | A Complete Guide To Manage Tasks*. [online] Available at: <https://kissflow.com/project/team/guide-to-task-management/> [Accessed 25 October 2020].   1. ***Task Scheduling Utilities***   ***A company or an organization runs on schedules and a predetermined vision. Scheduling tasks ensure the productivity and optimum management. We already been through a time phase when tasks were scheduled manually. Manual scheduling consumes a whole lot of time and resources. With a task scheduling software, the tasks can be easily created and managed till the completion. Here are some advantages of task scheduling***   * ***Low Cost to company*** * ***Hierarchy in workflow*** * ***Accessibility and communication*** * ***Error Prevention*** * ***Data Tracking***   ***Reference:***  Visualcron.com. 2020. *Advantages Of Using The Task Scheduling Software At Your Workplace*. [online] Available at: <https://www.visualcron.com/blog/post/2016/01/19/advantages-of-using-the-task-scheduling-software-at-your-workplace.aspx> [Accessed 25 October 2020]. |

1. Answer the following questions:
2. What is meant by user authentication? Write your response in 100-150 words.
3. Explain directory services in 100-150 words.

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| ***User authentication is a process that allows a device to verify the identify of someone who connects to a network resource. There are many technologies currently available to a network administrator to authenticate users. Fireware operates with frequently used applications, including RADIUS, Windows Active Directory, LDAP, and token-based SecurID. The Firebox also has its own authentication server. You can use the Firebox authentication features to monitor and control connections through the Firebox.***  ***Authentication is very important when you use dynamic IP addressing (DHCP) for computers on the trusted or optional network. It is also important if you must identify your users before you let them connect to resources on the external network. Because the Firebox associates a user name to an IP address, we do not recommend that you use authentication features in a network with multi-user computers such as Unix servers, terminal servers or Citrix servers. The Firebox authenticates one user per computer.***  ***Reference:***  Watchguard.com. 2020. *What Is User Authentication?*. [online] Available at: <https://www.watchguard.com/training/fireware/82/authent2.htm> [Accessed 25 October 2020].   1. ***A directory service is a customizable information store that functions as a single point from which users can locate resources and services distributed throughout the network. This customizable information store also gives administrators a single point for managing its objects and their attributes. Although this information store appears as a single point to the users of the network, it is actually most often stored in a distributed form.***   ***The database that forms a directory service is not designed for transactional data. (For this reason, many people prefer to use the phrase “information store” in their definitions of a directory service.) The data stored in your directory service should be fairly stable and should change only as frequently as the objects in your network. For example, the data that forms a directory service changes much less frequently than a sales database. Data that changes very frequently would be stored in another type of database on the network. (Of course, Microsoft would suggest Access or SQL Server for storing your transactional data.)***  ***Reference:***  dummies. 2020. *Defining Terms: What Is A Directory Service? - Dummies*. [online] Available at: <https://www.dummies.com/programming/networking/defining-terms-what-is-a-directory-service/> [Accessed 25 October 2020]. |

1. Answer the following.
2. List and explain two (2) network troubleshooting tools and techniques. Write your response in 100-150 words.
3. What are the five (5) network diagnostic utilities? Write 30-50 words for each.

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| 1. ***Every network administrator needs a good set of tools in their toolbox to get the job done right. Whether you’re the new guy in the office or a seasoned veteran, these tools will serve to help you investigate and troubleshoot countless issues as they arise on your network. Some of the troubleshooting tools are listed below:***  * ***Ping***   ***Ping is likely the number one utility that every tech pro will use on a daily basis. It helps us to determine two things: latency and packet loss. Because ICMP is typically the lowest priority packet in the pecking order, it doesn’t tell us what the problem is. Instead, it tells us that there is a problem that needs to be addressed. Usually, if there is either packet loss or latency (or both) this can indicate bandwidth saturation over a link or even a bad network cable or port on a switch. Regardless, this will almost always be your first go-to utility when you begin your troubleshooting process.***   * ***Traceroute / Tracert***   ***Traceroute is invaluable for telling us what network devices are between one point and another, and gives us some data on what those devices are doing. Some of the extra data it provides are latency values (min, average and max) and host names of the devices, if they’re configured to have them. This also helps us to figure out where these “hops” are, as ISPs typically include some sort of nomenclature to determine which state or country they’re in. On a private network, this may be less obvious. Traceroute can also help to diagnose routing issues, especially when we have more than one network connection to the outside world.***  ***Reference :***  Pluralsight.com. 2020. *Best Network Troubleshooting Tools For IP Pros*. [online] Available at: <https://www.pluralsight.com/blog/it-ops/best-network-troubleshooting-tools> [Accessed 26 October 2020].   1. ***Network utilities are basic software tools designed for analyzing and configuring various aspects of computer networks. They usually focus on one part of the network connection or one kind of device. Most network utilities were designed for Unix computer systems, but they’ve now been developed for use on all operating systems. Some of the network diagnostic utilities are listed below:***  * ***Ping***   ***Ping is a basic networking utility that comes with your operating system. You can use it to check whether an IP address can be reached. Using ping is simple: open a terminal and type in the command ping. You can also use it through a web interface as linked above.***   * ***Tracert***   ***Tracert is useful in a similar way to ping, in that it looks at the connection between the sender and the destination. Unlike ping, however, tracert provides details on all the “hops” the packet went through to get to the destination, including switches and routers, along with the IP address and DNS information of each. It then breaks down the information of each hop to show the latency between points.***   * ***ARP***   ***ARP stands for “Address Resolution Protocol.” It’s used to determine the MAC address associated with a particular IP address. You can use the ARP network utility to display the ARP table, which shows the mappings between IP and MAC addresses.***   * ***Netstat***   ***Another useful command-line network utility is netstat. Netstat, short for “network statistics,” allows you to display the network connections for TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Essentially, it lets you check whether the connections exist, and provides statistics to show how the connection is performing. The netstat command will show a list of TCP connections, the IP address of your computer, the IP address of the device the connection goes to (the foreign IP address), the port numbers of both, and the TCP state.***   * ***Nbtstat***   ***Nbtstat is a primarily diagnostic network utility. It uses NetBIOS over TCP/IP, a protocol for allowing old NetBIOS applications to be run on a TCP/IP network. If there’s a problem with NetBIOS over TCP/IP, you use nbtstat to troubleshoot it.***  ***Reference:*** Software Reviews, Opinions, and Tips - DNSstuff. 2020. *Top 10 Network Utilities You Should Use - Dnsstuff*. [online] Available at: <https://www.dnsstuff.com/network-utilities> [Accessed 26 October 2020]. |

1. How to test the server with the return error code 1603 and how to solve this error? Add snapshots.

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1. Answer the following questions:
2. What are steps involved in validating changes for a system? Write 100-150 words.
3. How can benchmark testing can optimising the performance of the server? Write your answer in 130-170 words.

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| 1. ***Implementing change in a validated system is a crucial time for ensuring it remains controlled. As a result, it is essential that change management is carefully planned and implemented.***   ***This is particularly important for compliance reasons, not least because a carefully planned and documented change management process demonstrates to regulators that validated systems remain in a controlled and validated state after the changes take effect.***  ***Steps involved in validating changes for a system are listed below as:***  ***Step 1. Access The Change Request***  ***This includes assessing whether the change request is clear and whether the requirements and objectives of the change are well-defined. It’s also important to assess whether the change request is justified, i.e. is it worth doing given the impact it could have on the already validated system.***  ***Step 2. Access The Impact***  ***You then need to assess the impact the change is likely to have on the controlled system. Often this involves conducting a risk assessment. A risk assessment will help to identify the parts of the system that require re-validation and new testing.***  ***Step 3. Document The Expected Outcomes***  ***The risk assessment and analysis of the impact of the change will produce a set of expected outcomes. You should document these outcomes as part of the change management process.***  ***Step 4. Implement The Change In a Safe Environment***  ***This could be a sandbox environment on a computer system, for example. If the change is being made to a manufacturing process, machine, or piece of equipment, the safe environment could be a digital twin. The safe environment could also be on a physical machine or manufacturing process while production is shut down.***  ***Step 5. Testing***  ***Test the changes you have made and their impact on the system in the safe environment. This testing should be measured against the expected outcomes documented earlier. The results of the tests should be also be documented.***  ***Step 6. Implement The Changes in The Live Environment***  ***Once you are happy with the results of testing in the safe environment, you can move to implementation in the live environment.***  ***Step 7. Testing and Re-Validation***  ***Further testing and re-validation should take place with full records kept of all tests and test results.***  ***Step 8. Update Validation Documentation***  ***The change you have implemented is likely to have made the existing validation documents out-of-date. You need to update these documents with the new information, specifications, processes, etc.***  ***Step 9. Train Users***  ***Finally, it may be important to re-train users on how the changes implemented will affect them.***  ***Reference:***  Slcontrols.com. 2020. *The Importance Of Change Management In Validated Systems – SL Controls*. [online] Available at: <https://slcontrols.com/the-importance-of-change-management-in-validated-systems/> [Accessed 27 October 2020].   1. ***Benchmark testing helps administrators monitor server resources, manage utilization, optimize performance and identify problems before they occur. Simple server configuration tweaks can squeeze more performance out of physical and virtual machines (VMs).***   ***Benchmark testing establishes baseline performance expectations, tracks system performance over time, plans virtualization capacity and manages server resources and performance. Benchmarks identify potential performance problems and future capacity needs. When conducted properly and consistently, good benchmark testing can provide valuable information that admins can use to improve server performance. Fine-tuning server configurations and eliminating bottlenecks can lead to substantial performance gains with minimal expense. Ensuring that systems are set up correctly is especially important with virtualized infrastructures. Performance options sometimes come with trade-offs, such as cooling problems or increased energy consumption.***  ***Working of Benchmarking:***   * ***Select a product, service or process to benchmark.*** * ***Identify the key performance metrics.*** * ***Choose companies or internal area to benchmark.*** * ***Collect data on performance and practices.*** * ***Analyze the data and identify opportunities for improvement.***   ***Reference:***  SearchDataCenter. 2020. *Server Performance And Benchmark Testing Guide*. [online] Available at: <https://searchdatacenter.techtarget.com/guide/Server-performance-and-benchmark-testing-guide> [Accessed 27 October 2020]. |

1. Answer the following questions:

A. How can firewalls help to implement security for the integrated server environment? Write 100-150 words for each.

B. Explain workstations in 50-100 words.

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| ***A> This is for Firewalls***  ***B> Workstation, a high-performance computer system that is basically designed for a single user and has advanced graphics capabilities, large storage capacity, and a powerful microprocessor (central processing unit). A workstation is more capable than a personal computer (PC) but is less advanced than a midrange computer (which can manage a large network of peripheral PCs or workstations and handle immense data-processing and reporting tasks). The term workstation is also sometimes ascribed to dumb terminals (i.e., without any processing capacity) that are connected to mainframe computers.***  ***Reference:***  Encyclopedia Britannica. 2020. *Workstation | Computer*. [online] Available at: <https://www.britannica.com/technology/workstation> [Accessed 27 October 2020]. |

1. Answer the following Questions:
2. What will you include while documenting server configuration and operational changes? Write your response in 100-150 words.
3. What are the benefits of cleanup and restoration of an ICT worksite as per client’s satisfaction? Write your response in 150-200 words.

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1. Answer the following questions:

A. What are the different factors to consider while securing approval of an ICT project? Write your response in 50-100 words.

B. What are the factors to consider while designing a client report? Write your response in 100-150 words.

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1. Answer the following questions:

A: What is meant by potential downtime also narrate what is included while preparing a downtime intimation to a client? Write your response in 150-200 words.

B: What is the importance of consultation with the key stakeholders and how does it help to effectively coordinate the task? Write your response in 100-150 words.

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1. What is the importance of the Occupational Health and Safety at a workplace? Write your response in 100-150 words.

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| ***Occupational Health and Safety is designed to create a safe, healthy work environment. It can generally be considered as two separate entities.***  ***Occupational Safety covers the risk factor in your workplace, and potential safety hazards that could possibly cause injury. Occupational Health, on the other hand, looks at potential health concerns and well being. Think of Safety as an employee’s physical well-being, and Health as everything else, including mental health.***  ***Some of The Importance of Occupational Health and Safety are listed below as :***   * ***Mental Health and Well-Being*** * ***Increased Awareness and Safe Working Culture*** * ***Increase in Productivity*** * ***Correct Training and Use of Tools*** * ***New Opportunities***   ***Reference:***  Safety & Access. 2020. *The Importance Of Occupational Health And Safety | Safety & Access*. [online] Available at: <https://www.safetyaccess.co.uk/2020/03/why-is-occupational-health-and-safety-important/> [Accessed 27 October 2020]. |

# **Unit Assessment Result Sheet (UARS)**

## **Assessment Task 1 – Unit Knowledge Test (UKT)**

## **Student and Trainer/Assessor Details**

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| **Unit code** | ICTNWK504 |
| **Unit name** | Design and implement an integrated server solution |
| **Outcome of Unit Assessment Task (UAT)** | |  | | --- | | **First attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year)   |  | | --- | | **Second attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year) |
| **Feedback to Student** | |  | | --- | | * **First attempt:** |  |  | | --- | | * **Second attempt:** | |
| **Student Declaration** | * I declare that the answers I have provided are my own work. Where I have accessed information from other sources, I have provided references and or links to my sources. * I have kept a copy of all relevant notes and reference material that I used as part of my submission. * I have provided references for all sources where the information is not my own. I understand the consequences of falsifying documentation and plagiarism. I understand how the assessment is structured. I accept that all work I submit must be verifiable as my own. * I understand that if I disagree with the assessment outcome, I can appeal the assessment process, and either re-submit additional evidence undertake gap training and or have my submission re-assessed. * All appeal options have been explained to me. |
| **Student Signature** |  |
| **Date** |  |
| **Trainer/Assessor Name** |  |
| **Trainer/Assessor Declaration** | I hold:  🗹 Vocational competencies at least to the level being delivered  🗹 Current relevant industry skills  🗹 Current knowledge and skills in VET, *and undertake*  🗹 Ongoing professional development in VET  *I declare that I have conducted an assessment of this candidate’s submission. The assessment tasks were deemed current, sufficient, valid and reliable. I declare that I have conducted a fair, valid, reliable, and flexible assessment. I have provided feedback to the above-named candidate.* |
| **Trainer/Assessor Signature** |  |
| **Date** |  |
| **Office Use Only** | Outcome of Assessment has been entered onto the Student Management System on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (insert date)  by (insert Name) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Unit Pre-Assessment Checklist (UPAC)**

# **UAT 2 – Unit Project (UP)**

## **Purpose of the checklist**

The pre-assessment checklist helps students determine if they are ready for assessment. The trainer/assessor must review the checklist with the student before the student attempts the assessment task. If any items of the checklist are incomplete or not clear to the student, the trainer/assessor must provide relevant information to the student to ensure they understand the requirements of the assessment task. The student must ensure they are ready for the assessment task before undertaking it.**Section 1: Information for Students**

* Please make sure you have completed the necessary prior learning before attempting this assessment.
* Please make sure your trainer/assessor clearly explained the assessment process and tasks to be completed.
* Please make sure you understand what evidence is required to be collected and how.
* Please make sure you know your rights and the Complaints and Appeal process.
* Please make sure you discuss any special needs or reasonable adjustments to be considered during the assessment (refer to the Reasonable Adjustments Strategy Matrix and negotiate these with your trainer/assessor).
* Please make sure that you have access to a computer and the internet (if you prefer to type the answers).
* Please ensure that you have all the required resources needed to complete this Unit Assessment Task (UAT).
* Due date of this assessment task is according to your timetable.
* In exceptional (compelling and compassionate) circumstances, an extension to submit an assessment can be granted by the trainer/assessor.
* Evidence of the compelling and compassionate circumstances must be provided together with your request for an extension to submit your assessment work.
* Request for an extension to submit your assessment work must be made before the due date of this assessment task.

## **Section 2: Reasonable adjustments**

* Students with carer responsibilities, cultural or religious obligations, English as an additional language, disability etc. can request for reasonable adjustments.
* Please note, academic standards of the unit/course will not be lowered to accommodate the needs of any student, but there is a requirement to be flexible about the way in which it is delivered or assessed.
* The Disability Standards for Education requires institutions to take reasonable steps to enable the student with a disability to participate in education on the same basis as a student without a disability.
* Trainer/Assessor must complete the section below “Reasonable Adjustment Strategies Matrix” to ensure the explanation and correct strategy have been recorded and implemented.
* Trainer/Assessor must notify the administration/compliance and quality assurance department for any reasonable adjustments made.
* All evidence and supplementary documentation must be submitted with the assessment pack to the administration/compliance and quality assurance department.

|  |  |  |
| --- | --- | --- |
| **Reasonable Adjustment Strategies Matrix (Trainer/Assessor to complete)** | | |
| **Category** | **Possible Issue** | **Reasonable Adjustment Strategy**  **(select as applicable)** |
| 🞎 LLN | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Confidence | 🞎 Verbal assessment  🞎 Presentations  🞎 Demonstration of a skill  🞎 Use of diagrams  🞎 Use of supporting documents such as wordlists |
| 🞎 Non-English Speaking Background | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Cultural background  🞎 Confidence | 🞎 Discuss with the student and supervisor (if applicable) whether language, literacy and numeracy are likely to impact on the assessment process  🞎 Use methods that do not require a higher level of language or literacy than is required to perform the job role  🞎 Use short sentences that do not contain large amounts of information  🞎 Clarify information by rephrasing, confirm understanding  🞎 Read any printed information to the student  🞎 Use graphics, pictures and colour coding instead of, or to support, text  🞎 Offer to write down, or have someone else write, oral responses given by the student  🞎 Ensure that the time available to complete the assessment, while meeting enterprise requirements, takes account of the student’s needs |
| 🞎 Indigenous | 🞎 Knowledge and understanding  🞎 Flexibility  🞎 Services  🞎 Inappropriate training and assessment | 🞎 Culturally appropriate training  🞎 Explore understanding of concepts and practical application through oral assessment  🞎 Flexible delivery  🞎 Using group rather than individual assessments  🞎 Assessment through completion of practical tasks in the field after demonstration of skills and knowledge. |
| 🞎 Age | 🞎 Educational background  🞎 Limited study skills | 🞎 Make sure font size is not too small  🞎 Trainer/Assessor should refer to the student’s experience  🞎 Ensure that the time available to complete the assessment takes account of the student’s needs  🞎 Provision of information or course materials in accessible format.  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note-taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |
| 🞎 Educational background | 🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Discuss with the Student previous learning experience  🞎 Ensure learning and assessment methods meet the student’s individual need |
| 🞎 Disability | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Identify the issues  🞎 Create a climate of support  🞎 Ensure access to support that the student has agreed to  🞎 Appropriately structure the assessment  🞎 provision of information or course materials in accessible format, e.g. a text book in braille  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |

| **Explanation of reasonable adjustments strategy used (If required)** |
| --- |
|  |

# **Unit Assessment Task (UAT)**

## **Assessment Task 2 – Unit Project (UP)**

**Assessment type:**

Unit Project (UP)

**Assessment task description:**

* This is the second (2) assessment task you have to successfully complete to be deemed competent in this unit of competency.
* This assessment task requires you to complete a project.
* You will receive your feedback within two weeks - you will be notified by your trainer/assessor when results are available.
* You must attempt all activities of the project for your trainer/assessor to assess your competency in this assessment task.

**Applicable conditions:**

* This project is untimed and are conducted as open book tests (this means you are able to refer to your textbook).
* You must read and respond to all criteria of the project.
* You may handwrite/use computers to answer the criteria of the project.
* You must complete the task independently.
* No marks or grades are allocated for this assessment task. The outcome of the task will be Satisfactory or Not Satisfactory.
* As you complete this assessment task you are predominately demonstrating your practical skills, techniques and knowledge to your trainer/assessor.
* The trainer/assessor may ask you relevant questions on this assessment task to ensure that this is your own work.

**Resubmissions and reattempts:**

* Where a student’s answers are deemed not satisfactory after the first attempt, a resubmission attempt will be allowed.
* You must speak to your Trainer/Assessor if you have any difficulty in completing this task and require reasonable adjustments (e.g. can be given as an oral assessment).
* For more information, please refer to your RTO Student Handbook.

**Location:**

* This assessment task may be completed in an independent learning environment or learning management system.
* Your trainer/assessor will provide you further information regarding the location of completing this assessment task.

**General Instructions for attempting the project:**

* You will be required to correctly attempt all activities of this assessment task.

**How your trainer/assessor will assess your work?**

* This assessment task requires the student to successfully complete and submit a project.
* Answers must demonstrate the student’s understanding and skills of the unit.
* You will be assessed according to the provided performance checklist/ performance criteria.
* Assessment objectives/ measurable learning outcome(s) are attached as performance checklist/ performance criteria with this assessment task to ensure that you have successfully completed and submitted the assessment task.
* If all assessment tasks are deemed Satisfactory (S), then the unit outcome is Competent (C).
* If at least one of the assessment task is deemed Not Satisfactory (NS), then the unit outcome is Not Yet Competent (NYC).
* Once all assessment tasks allocated to this Unit of Competency have been undertaken, trainer/assessor will complete an Assessment plan to record the unit outcome. The outcome will be either Competent (C) or Not Yet Competent (NYC).
* The “Assessment Plan” is available with the Unit Assessment Pack (UAP) – Cover Sheet.

**Purpose of the assessment task:**

This assessment task is designed to evaluate your following skills and abilities to implement integrated server solution.

## **Assessment Task 2 - Unit Project (UP)**

**Instructions to complete this assessment task**:

* Please write your responses in the template provided.
* You may attach a separate sheet if required.
* You must include the following particulars in the footer section of each page of the attached sheets:
  + Student ID or Student Name
  + Unit ID or Unit Code
  + Course ID or Course Code
  + Trainer and assessor name
  + Page numbers
* You must staple the loose sheets together along with the cover page.
* You must attach the loose sheets chronologically as per the page numbers.
* Correction fluid and tape are not permitted. Please do any corrections by striking through the incorrect words with one or two lines and rewriting the correct words.
* The premise of the project must be closely related to the previous assessment task.
* This submission must be well presented and follow the guidelines and instructions provided.
* Please follow the format as indicated in the template section below.
* One of the most important steps that you can take: proofread your project.
* Project must be of 500-800 words in length, using 11-point font, double-spaced, and must include a cover page, table of contents, introduction, body, summary or conclusion, and works cited.
* Appropriate citations are required.
* All RTO policies are in effect, including the plagiarism policy.

**Scenario: -**

ASMEDA-AUSTRALIA Small and Medium Enterprise Development Authority is a public sector organisation, and its head office is situated in Melbourne. With a futuristic approach and professional management structure it has focus on providing an enabling environment and business development services to small and medium enterprises. ASMEDA is not only an SME-Small and Medium Enterprise policy-advisory body for the government of Australia but also facilitates other stakeholders in addressing their SME development agendas.

ASMEDA is one of the leading intellectual public sector organisations of Australia, offering guidance to SMEs not only by just creating policies and regulations the SMEs but also has developed more than 200 feasibility reports for different business sectors. The feasibility reports help the entrepreneurs and the SMEs to set up their business as per the latest market trends and customer requirements.

As mentioned the Head Office of the organisation is situated in the CBD of Melbourne, therefore all the operational and online activities and facilitations are also hosted at the head office. The server room and the data centre of the organisation is also kept at the head office. The head office and all the regional offices are connected with the network, servers and all the ICT equipment. The email server, file server, proxy server, web server, DNS server, DHCP Server, SQL server all are hosted in the IT department of the Head Office.

The data in the servers is off immense value due to the copyright of the contents and need to be assessed only by the authorised personal. Also, it has been observed that in the organisations, different operating systems are being used by the employees. For instance, the mid level employees are using Windows Desktop and Laptops, Managerial staff is using MAC OS while IPADS and Andriod Pads are also used by the employees for the presentation and other purposed.

Graham is working as the IT Manager while assisting the Chief Information Officer-Adam. Both of these are responsible for the integrity of the data along with the smooth setup and working of all the ICT equipment.

It has been observed by the ICT department that due to the versatility in the use of the operating systems and to ensure security of the servers and the network, An integrated server solution needs to be designed and implemented so the secure the ICT resources and most importantly, THE DATA.

The solution will not only help to secure that data but will also provide the authentication mechanism to be implemented across the board for all the operating systems

Graham being the IT Manager will assist the Chief Information Officer Adam in the designing and implementation of the integrated server solution

The job descriptions of both the IT personnel are as under.

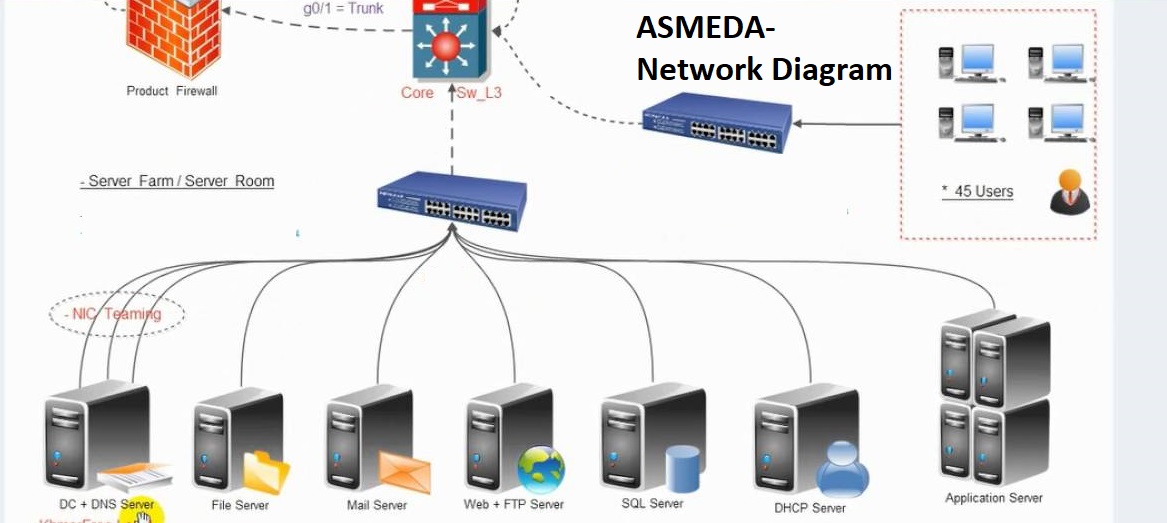
Job Description of CIO:

* Set objectives and strategies for the IT department
* Select and implement suitable technology to streamline all internal operations and help optimize their strategic benefits
* Design and customize technological systems and platforms to improve customer experience
* Plan the implementation of new systems and provide guidance to IT professionals and other staff within the organization
* Approve purchases of technological equipment and software and establish partnerships with IT providers
* Oversee the technological infrastructure (networks and computer systems) in the organization to ensure optimal performance
* Direct and organize IT-related projects
* Monitor changes or advancements in technology to discover ways the company can gain competitive advantage
* Analyze the costs, value and risks of information technology to advise management and suggest actions

Job Description of IT Manager:

* Perform all supervisory responsibilities associated with the IT department including employee related issues.
* Enforce company policies and procedures as a member of management for all employees.
* Present a professional image as a representative of the company.
* Establish and maintain effective professional working relationships with co-workers, and every level of management.
* Determine the goals of IT within broad outlines provided by the executive management and contribute to the continuity of computer services by providing necessary technical leadership and project coordination.
* Forecast costs, equipment and personnel needs for projects and programs as required and related to MIS operations.
* Stay abreast of the latest developments in MIS technology and remain highly technically competent at all levels of data processing while striving for enhanced user productivity through implementation of new software technology where applicable, and the implementation of policies that more effectively utilize MIS resources.
* Prepare long and short-range plans for application selection, systems development, and acquisition of the resources needed to support them. Assure responsiveness of long-range plans to corporate objectives.
* Establish and maintain relationships with contractors and equipment suppliers.

The network of the ASMEDA is illustrated in the below given network diagram to make it easy to understand the structure of the server room of the integrated server solution:



**Activity 1: :(Role Play on preparation of designing, documentation for the implementation of the integrated server solution)**

The IT department needs to correspond with the management of the organisation including the senior management and importantly the finance management who are considered as the major stakeholders of the organisation. Also, the end users are the clients of the solution to be implemented by the IT department. So, the IT Manager under the supervision of the CIO needs to discus and correspond with the clients and the stakeholders of the organisation and will elaborate the planning involved in the designing and documentation of the implementation of the integrated server solution.

You will act as the IT Manager and will elaborate in the meeting (role play) about the preparation and implementation of the integrated solution. Your assessor/trainer will act as the CIO and will correspond with the management and the end users in briefing the requirements. Three of the students will act as the stakeholders and client, including one student will act as General Manager, one as Finance Manager and one student will act as the end user.

Trainer will provide you 10-15 minutes to complete the role play. Additional time will be given as required. Your trainer will observe you during the role play and complete the following performance checklist.

In the role-play you need to discuss the following:

* Requirements of the server integration solution with the stakeholders and client
* Management of the process according to the OHS processes and procedures
* You also need to elaborate the access of the site along with the potential downtime.
  + For downtime you need to verify the substitute for the access and updating of the data to the client
  + Also, how long with the implementation of the solution will take time.
* Also, in the meeting you need to ensure that all the related personnel who are directly or indirectly involved in the implementation process are aware of the implementation. Make sure during the role play that all the participants are actively engaged in the discussion.
* Also, highlight the clean-up process and restoration of the worksite as per the requirements of the end users.

You are required to complete the following meeting minute’s template and submit to your trainer/assessor.

|  |  |  |  |
| --- | --- | --- | --- |
| **Minutes of Meeting**  **Meeting Objective:**  **Attendees:**  **Venue:**  **Date:** | | | |
| **No** | **Points Discussed** | **Actions Suggested** | **Target Date** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| **Signature of attendee 1: Signature of attendee 2:**  **Signature of attendee 3: Signature of attendee 4:** | | | |

**Activity 2: Report - (Documentation of the plan and design of the integrated server solution)**

Before initiation of the implementation of the integrated solution, you need to prepare a report including the planning and designing of the solution. You will prepare the report and present the report for final approval from the competent authority i.e. General Manager and Chief Information Officer.

In your report analyse the following points and complete the below given template for the report:

* Different Authentication Models that will be suitable for the integration of the different operating systems implemented in the network.
* Reason of the selection of the authenticated method and protocol
* Investigate the redundancy and replication requirements for the authentication model
* Prepare the integrated server design, including the authentication, file sharing and security
* Also, include the configurations made to the server along with the server status

|  |
| --- |
| **Report on Design and Planning of the integration Server**  **Purpose:**  **Department:**  **Stakeholders:**  **Supervised by:**  **Available authentication models:**  **Reason for selecting the authentication model and protocol:**  **Design of integrated server:**  **Server status:**  **Configurations made to server:** |

## **Performance criteria checklist for unit assessment task:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Trainer/ Assessor to complete** | | | |
| **Assessment activities to be completed** | * Role Play and Report on planning and designing the implementation of the integrated server solution * For a full project outline, please refer to the student assessment instructions | | |
| **Resources required for the unit assessment task** | * Unit assessment guide template * Access to live or simulated working environment * Interaction with others | | |
| **Does the candidate meet the following criteria** | **Yes** | **No** | **Trainer/Assessor Comments** |
| Completed the template for report and meeting minutes |  |  |  |
| Discussed the requirements for the implementation of the integrated server |  |  |  |
| Discussed the implementation as per OHS processes and procedures |  |  |  |
| Explained the site access and potential downtime |  |  |  |
| Ensured everyone’s participation in the role play |  |  |  |
| Discussed the clean-up and restoration of the worksite |  |  |  |
| Analysed different available authentication models |  |  |  |
| Analysed selected authentication model and protocol |  |  |  |
| Analysed the redundancy and replication requirements for the authentication model |  |  |  |
| Prepared the server design |  |  |  |
| Secured the sign –off from the competent authority |  |  |  |

# **Unit Assessment Result Sheet (UARS)**

## **Assessment Task 2 – Unit skills test (UST)**

## **Student and Trainer/Assessor Details**

|  |  |
| --- | --- |
| **Unit code** | ICTNWK504 |
| **Unit name** | Design and implement an integrated server solution |
| **Outcome of Unit Assessment Task (UAT)** | |  | | --- | | **First attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year)   |  | | --- | | **Second attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year) |
| **Feedback to Student** | |  | | --- | | * **First attempt:** |  |  | | --- | | * **Second attempt:** | |
| **Student Declaration** | * I declare that the answers I have provided are my own work. Where I have accessed information from other sources, I have provided references and or links to my sources. * I have kept a copy of all relevant notes and reference material that I used as part of my submission. * I have provided references for all sources where the information is not my own. I understand the consequences of falsifying documentation and plagiarism. I understand how the assessment is structured. I accept that all work I submit must be verifiable as my own. * I understand that if I disagree with the assessment outcome, I can appeal the assessment process, and either re-submit additional evidence undertake gap training and or have my submission re-assessed. * All appeal options have been explained to me. |
| **Student Signature** |  |
| **Date** |  |
| **Trainer/Assessor Name** |  |
| **Trainer/Assessor Declaration** | I hold:  🗹 Vocational competencies at least to the level being delivered  🗹 Current relevant industry skills  🗹 Current knowledge and skills in VET, *and undertake*  🗹 Ongoing professional development in VET  *I declare that I have conducted an assessment of this candidate’s submission. The assessment tasks were deemed current, sufficient, valid and reliable. I declare that I have conducted a fair, valid, reliable, and flexible assessment. I have provided feedback to the above-named candidate.* |
| **Trainer/Assessor Signature** |  |
| **Date** |  |
| **Office Use Only** | Outcome of Assessment has been entered onto the Student Management System on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (insert date)  by (insert Name) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Unit Pre-Assessment Checklist (UPAC)**

# **UAT 3 – Unit Project (UP)**

## **Purpose of the checklist**

The pre-assessment checklist helps students determine if they are ready for assessment. The trainer/assessor must review the checklist with the student before the student attempts the assessment task. If any items of the checklist are incomplete or not clear to the student, the trainer/assessor must provide relevant information to the student to ensure they understand the requirements of the assessment task. The student must ensure they are ready for the assessment task before undertaking it.**Section 1: Information for Students**

* Please make sure you have completed the necessary prior learning before attempting this assessment.
* Please make sure your trainer/assessor clearly explained the assessment process and tasks to be completed.
* Please make sure you understand what evidence is required to be collected and how.
* Please make sure you know your rights and the Complaints and Appeal process.
* Please make sure you discuss any special needs or reasonable adjustments to be considered during the assessment (refer to the Reasonable Adjustments Strategy Matrix and negotiate these with your trainer/assessor).
* Please make sure that you have access to a computer and the internet (if you prefer to type the answers).
* Please ensure that you have all the required resources needed to complete this Unit Assessment Task (UAT).
* Due date of this assessment task is according to your timetable.
* In exceptional (compelling and compassionate) circumstances, an extension to submit an assessment can be granted by the trainer/assessor.
* Evidence of the compelling and compassionate circumstances must be provided together with your request for an extension to submit your assessment work.
* Request for an extension to submit your assessment work must be made before the due date of this assessment task.

## **Section 2: Reasonable adjustments**

* Students with carer responsibilities, cultural or religious obligations, English as an additional language, disability etc. can request for reasonable adjustments.
* Please note, academic standards of the unit/course will not be lowered to accommodate the needs of any student, but there is a requirement to be flexible about the way in which it is delivered or assessed.
* The Disability Standards for Education requires institutions to take reasonable steps to enable the student with a disability to participate in education on the same basis as a student without a disability.
* Trainer/Assessor must complete the section below “Reasonable Adjustment Strategies Matrix” to ensure the explanation and correct strategy have been recorded and implemented.
* Trainer/Assessor must notify the administration/compliance and quality assurance department for any reasonable adjustments made.
* All evidence and supplementary documentation must be submitted with the assessment pack to the administration/compliance and quality assurance department.

|  |  |  |
| --- | --- | --- |
| **Reasonable Adjustment Strategies Matrix (Trainer/Assessor to complete)** | | |
| **Category** | **Possible Issue** | **Reasonable Adjustment Strategy**  **(select as applicable)** |
| 🞎 LLN | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Confidence | 🞎 Verbal assessment  🞎 Presentations  🞎 Demonstration of a skill  🞎 Use of diagrams  🞎 Use of supporting documents such as wordlists |
| 🞎 Non-English Speaking Background | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Cultural background  🞎 Confidence | 🞎 Discuss with the student and supervisor (if applicable) whether language, literacy and numeracy are likely to impact on the assessment process  🞎 Use methods that do not require a higher level of language or literacy than is required to perform the job role  🞎 Use short sentences that do not contain large amounts of information  🞎 Clarify information by rephrasing, confirm understanding  🞎 Read any printed information to the student  🞎 Use graphics, pictures and colour coding instead of, or to support, text  🞎 Offer to write down, or have someone else write, oral responses given by the student  🞎 Ensure that the time available to complete the assessment, while meeting enterprise requirements, takes account of the student’s needs |
| 🞎 Indigenous | 🞎 Knowledge and understanding  🞎 Flexibility  🞎 Services  🞎 Inappropriate training and assessment | 🞎 Culturally appropriate training  🞎 Explore understanding of concepts and practical application through oral assessment  🞎 Flexible delivery  🞎 Using group rather than individual assessments  🞎 Assessment through completion of practical tasks in the field after demonstration of skills and knowledge. |
| 🞎 Age | 🞎 Educational background  🞎 Limited study skills | 🞎 Make sure font size is not too small  🞎 Trainer/Assessor should refer to the student’s experience  🞎 Ensure that the time available to complete the assessment takes account of the student’s needs  🞎 Provision of information or course materials in accessible format.  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note-taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |
| 🞎 Educational background | 🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Discuss with the Student previous learning experience  🞎 Ensure learning and assessment methods meet the student’s individual need |
| 🞎 Disability | 🞎 Speaking  🞎 Reading  🞎 Writing  🞎 Numeracy  🞎 Limited study skills and/or learning strategies | 🞎 Identify the issues  🞎 Create a climate of support  🞎 Ensure access to support that the student has agreed to  🞎 Appropriately structure the assessment  🞎 provision of information or course materials in accessible format, e.g. a text book in braille  🞎 Changes in teaching practices, e.g. wearing an FM microphone to enable a student to hear lectures  🞎 Supply of specialised equipment or services, e.g. a note taker for a student who cannot write  🞎 Changes in lecture schedules and arrangements, e.g. relocating classes to an accessible venue  🞎 Changes to course design, e.g. substituting an assessment task  🞎 Modifications to physical environment, e.g. installing lever taps, building ramps, installing a lift |

| **Explanation of reasonable adjustments strategy used (If required)** |
| --- |
|  |

# **Unit Assessment Task (UAT)**

## **Assessment Task 3 – Unit Project (UP)**

**Assessment type:**

Unit Project (UP)

**Assessment task description:**

* This is the third (3) assessment task you have to successfully complete to be deemed competent in this unit of competency.
* This assessment task requires you to complete a project.
* You will receive your feedback within two weeks - you will be notified by your trainer/assessor when results are available.
* You must attempt all activities of the project for your trainer/assessor to assess your competency in this assessment task.

**Applicable conditions:**

* This project is untimed.
* You must read and respond to all criteria of the project.
* You may handwrite/use computers to answer the criteria of the project.
* You must complete the task independently.
* No marks or grades are allocated for this assessment task. The outcome of the task will be Satisfactory or Not Satisfactory.
* As you complete this assessment task you are predominately demonstrating your practical skills, techniques and knowledge to your trainer/assessor.
* The trainer/assessor may ask you relevant questions on this assessment task to ensure that this is your own work.

**Resubmissions and reattempts:**

* Where a student’s answers are deemed not satisfactory after the first attempt, a resubmission attempt will be allowed.
* You must speak to your Trainer/Assessor if you have any difficulty in completing this task and require reasonable adjustments (e.g. can be given as an oral assessment).
* For more information, please refer to your RTO Student Handbook.

**Location:**

* This assessment task may be completed in a simulated learning environment.
* Your trainer/assessor will provide you further information regarding the location of completing this assessment task.

**General Instructions for attempting the project:**

* This assessment task is in continuation to the previous task.
* You will be expanding the knowledge and skills acquired during the previous assessment task.
* You will be required to correctly attempt all activities of this assessment task.

**How your trainer/assessor will assess your work?**

* This assessment task requires the student to successfully complete and submit a project.
* Answers must demonstrate the student’s understanding and skills of the unit.
* You will be assessed according to the provided performance checklist/ performance criteria.
* Assessment objectives/ measurable learning outcome(s) are attached as performance checklist/ performance criteria with this assessment task to ensure that you have successfully completed and submitted the assessment task.
* If all assessment tasks are deemed Satisfactory (S), then the unit outcome is Competent (C).
* If at least one of the assessment task is deemed Not Satisfactory (NS), then the unit outcome is Not Yet Competent (NYC).
* Once all assessment tasks allocated to this Unit of Competency have been undertaken, trainer/assessor will complete an Assessment plan to record the unit outcome. The outcome will be either Competent (C) or Not Yet Competent (NYC).
* The “Assessment Plan” is available with the Unit Assessment Pack (UAP) – Cover Sheet.

**Purpose of the assessment task:**

This assessment task is designed to evaluate your following skills and abilities:

* Install and configure the integrated server solution
* Test and reconfigure network servers

## **Assessment Task 3 - Unit Project (UP)**

**Instructions to complete this assessment task**:

* You may attach a separate sheet if required.
* You must include the following particulars in the footer section of each page of the attached sheets:
  + Student ID or Student Name
  + Unit ID or Unit Code
  + Course ID or Course Code
  + Trainer and assessor name
  + Page numbers
* You must staple the loose sheets together along with the cover page.
* You must attach the loose sheets chronologically as per the page numbers.
* Correction fluid and tape are not permitted. Please do any corrections by striking through the incorrect words with one or two lines and rewriting the correct words.
* The premise of the project must be closely related to the previous assessment task.
* This submission must be well presented and follow the guidelines and instructions provided.
* Please follow the format as indicated in the template section below.
* One of the most important steps that you can take: proofread your project.
* Project must be of 500-800 words in length, using 11-point font, double-spaced, and must include a cover page, table of contents, introduction, body, summary or conclusion, and works cited.
* Appropriate citations are required.
* All RTO policies are in effect, including the plagiarism policy.

**Activity 1 - (Implementation of the integrated server solution)**

After the planning and documentation of the implementation of the integrated server solution, now you need to implement the integrated server solution of the network operating systems. You will act as the IT Manager and you need to implement the solution as per the scenario and the diagram given. The assessor/trainer will act as the CIO and supervise and will provide you all the requirements and a site for the implementation of the server solution.

Note: For This activity RTO/Assessor will provide you the following:

* A site where server installation may be conducted
* Relevant server specifications such as:
* Multiple operating system platforms
* Cabling
* Networked (LAN) computers
* Server diagnostic software
* Switching equipment
* Client requirements
* Workstations

You need to implement the integrated server solution based on prepared server design in assessment task 2 and as per the given points:

* Install and configure the server for the implementation of the integrated authentication solution
* Configure the integrated file sharing solution
* Optimise and configure the workstations for the integrated environment including the following:
  + Share
  + Effective Access
  + Central Policy
* Also, implement the security for the management of the integrated server solution
  + Automatic synchronisation of passwords
  + Central or synchronised identity management system to store information about users
  + Data availability for mobile devices
  + Login with same user credentials across multiple platforms
  + Password security across platforms
  + Secure file sharing across multiple platforms
  + Single sign-on.

## **Performance criteria checklist for unit assessment task:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Trainer/ Assessor to complete** | | | |
| **Assessment activities to be completed** | * **Implementation of the integrated server solution** * For a full project outline, please refer to the student assessment instructions | | |
| **Resources required for the unit assessment task** | * Unit assessment guide template * Access to live or simulated working environment * Interaction with others | | |
| **Does the candidate meet the following criteria** | **Yes** | **No** | **Trainer/Assessor Comments** |
| Implemented the integration authentication solution |  |  |  |
| Configured the integrated file sharing system |  |  |  |
| Optimise and configure the workstations for the integrated environment including the following:   * + Share   + Effective Access   + Central Policy |  |  |  |
| Configured the workstations for the integrated environment |  |  |  |
| Implemented the security   * + Automatic synchronisation of passwords   + Central or synchronised identity management system to store information about users   + Data availability for mobile devices   + Login with same user credentials across multiple platforms   + Password security across platforms   + Secure file sharing across multiple platforms   + Single sign-on. |  |  |  |

**Activity 2**: **(Test and troubleshoot the network servers)**

Continuation to the previous tasks, you need to test and troubleshoot the integrated server to optimise the performance of the implemented solution as per the requirements. The trainer/assessor will act as the CIO and will provide you all the requirements for the testing and troubleshooting of the implemented server solution. Note: For This activity RTO/Assessor will provide you the following:

* A site where server installation may be conducted
* Relevant server specifications such as:
* Multiple operating system platforms
* Cabling
* Networked (LAN) computers
* Server diagnostic software
* Switching equipment
* Client requirements
* Workstations

You need to test and troubleshoot the network servers as per the following:

* Test the network server as per the requirements and plan defined initially and complete the below given template.
* Analyse the error reports and make changes
  + You need to make at least two changes based on the configuration. Changes can be update password policy, firewall setting, etc.
* Troubleshoot the network server using the network troubleshooting tools and techniques
  + You need to use at least two tools and techniques to troubleshoot the network functionally
* Test again as per the changes made and validate the changes as per the design and implementation documentation. You need to complete the following testing template again to test the network functionality.

**Template for TESTING NETWORK SERVER**

| Metrics | Value Measured |
| --- | --- |
| CPU utilization |  |
| Physical Memory Percentage used |  |
| Memory |  |
| Java Virtual Machine (JVM) Runtime/Total Memory |  |
| JVM Runtime/Free Memory |  |
|  |
| JDBC Connections/Concurrent Waiters |  |
| JDBC DB Connections/Percent used |  |
| JDBC DB Connections/Percent maxed |  |
| Thread Creates |  |
| Thread Destroys |  |
| Thread Pool/Active Threads |  |
| Thread Pool/Pool Size |  |
| Thread Pool/Percent Maxed |  |
| Heap size |  |
| Memory |  |
| Disk I/O |  |
| Network |  |
| Queue Depth |  |

**TASK 2: Complete and document network design and installation**

Once the testing of the integrated server solution is done, you need to clean up and restore the worksite and prepare a report on the following in terms of the documentation of the network design and the installation. The report must include the following:

* Changes made to the server including the following changes:
  + Configuration changes
  + Operational Changes
* Also complete this report including the server status and at the end you need to complete the sign off the implementation process initiation from the General Manager and Chief information Officer.
* Clean up and restore the worksite.

**Template for Report on Network Server:**

|  |
| --- |
| **Background:**  **Configuration Changes:**  **Operational changes to server:**  **Server Status:** |

**SIGN –off Document**

|  |  |  |  |
| --- | --- | --- | --- |
| **1. Implementation Summary** | | | |
| **Start Date** |  | **Finish Date** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 5. Document Signatures | | | |
| **Name** | **Description** | **Signature** | **Date** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## **Performance criteria checklist for unit assessment task:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Trainer/ Assessor to complete** | | | |
| **Assessment activities to be completed** | * **Test and troubleshoot the network servers** * For a full project outline, please refer to the student assessment instructions | | |
| **Resources required for the unit assessment task** | * Unit assessment guide template * Access to live or simulated working environment * Interaction with others | | |
| **Does the candidate meet the following criteria** | **Yes** | **No** | **Trainer/Assessor Comments** |
| Tested the network server |  |  |  |
| Analysed the errors |  |  |  |
| Troubleshoot the network server |  |  |  |
| Tested the changes made |  |  |  |
| Completed the report on server |  |  |  |
| Checked the server status |  |  |  |
| Got approval by sign off from the authority |  |  |  |
| Cleaned up and restore the work site |  |  |  |

# **Unit Assessment Result Sheet (UARS)**

## **Assessment Task 3 – Unit skills test (UST)**

## **Student and Trainer/Assessor Details**

|  |  |
| --- | --- |
| **Unit code** | ICTNWK504 |
| **Unit name** | Design and implement an integrated server solution |
| **Outcome of Unit Assessment Task (UAT)** | |  | | --- | | **First attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year)   |  | | --- | | **Second attempt:** |   Outcome (please make sure to tick the correct checkbox):  Satisfactory (S)  or Not Satisfactory (NS)  Date: \_\_\_\_\_\_\_(day)/ \_\_\_\_\_\_\_(month)/ \_\_\_\_\_\_\_\_\_\_\_\_(year) |
| **Feedback to Student** | |  | | --- | | * **First attempt:** |  |  | | --- | | * **Second attempt:** | |
| **Student Declaration** | * I declare that the answers I have provided are my own work. Where I have accessed information from other sources, I have provided references and or links to my sources. * I have kept a copy of all relevant notes and reference material that I used as part of my submission. * I have provided references for all sources where the information is not my own. I understand the consequences of falsifying documentation and plagiarism. I understand how the assessment is structured. I accept that all work I submit must be verifiable as my own. * I understand that if I disagree with the assessment outcome, I can appeal the assessment process, and either re-submit additional evidence undertake gap training and or have my submission re-assessed. * All appeal options have been explained to me. |
| **Student Signature** |  |
| **Date** |  |
| **Trainer/Assessor Name** |  |
| **Trainer/Assessor Declaration** | I hold:  🗹 Vocational competencies at least to the level being delivered  🗹 Current relevant industry skills  🗹 Current knowledge and skills in VET, *and undertake*  🗹 Ongoing professional development in VET  *I declare that I have conducted an assessment of this candidate’s submission. The assessment tasks were deemed current, sufficient, valid and reliable. I declare that I have conducted a fair, valid, reliable, and flexible assessment. I have provided feedback to the above-named candidate.* |
| **Trainer/Assessor Signature** |  |
| **Date** |  |
| **Office Use Only** | Outcome of Assessment has been entered onto the Student Management System on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (insert date)  by (insert Name) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |