NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

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PROPOSED OCCUPATIONAL STANDARDS

OCCUPATION: CYBER SECURITY TECHNICIAN

LEVEL: NTA 4

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ABBREVIATIONS

BIOS   Basic Input/Output System

CBET   Competency Based Education and Training

DHCP   Dynamic Host Configuration Protocol

IP   Internet Protocol

NACTVET   National Council for Technical and Vocational Education and Training

NOS   National Occupational Standards

OS   Occupational Standards

SSH   Secure Shell

TET   Technical Education and Training

TVET   Technical and Vocational Education and Training

GLOSSARY OF TERMS

Circumstantial Knowledge:	Detailed knowledge, which allows the decision-making in regard to different circumstances and cross cutting issues.
Competence:	The ability to use knowledge, understanding, practical, and thinking skills to perform effectively to the workplace standards required in employment.
Competency:	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
Competency-based Education:	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
Curriculum:	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
Educational/Training Programme:	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
Occupation:	A specific position requiring the performance of specific tasks – essentially the same tasks are performed by all employees having the same title.
Occupational Area:	This is a broad grouping of related jobs. (Example: food service)
Occupational Competence:	The application of knowledge and skills that consistently meet the standards required by the work context.
Occupational Standards:	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as a performance tool of assessment of the prescribed outcomes.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation.
Performance Criteria:	Indicate expected end results or outcomes in the form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.
Standards:	A set of statements, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.

Task Analysis: The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance standards, tools and materials needed, as well as safety concerns required for the employees performing it.

Task: A work activity that has a definite beginning and ending, is observable or measurable, and consists of two or more definite steps that leads to a product, service, or decision.

Underpinning Knowledge: Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.

Verification Process: The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

1.0. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical and Vocational Education and Training of Tanzania has begun the job of drafting Occupational Standards that will eventually be adopted as National Occupational Standards for TET in order to ensure that it meets the needs of the labour market and the country's economic agenda.

National Occupational Standards (NOS) are performance criteria that are matched with labour market demands. Each National Occupational Standard describes functions, performance standards, and knowledge/understanding for one important function or task. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruiting, supervision, and appraisal, as well as TET standards. They're also helpful for benchmarking and harmonizing qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current and consistent in delivery across all public and private institutions.

However, it must be noted that, Occupational Standards and Training Standards/Qualifications Standards are different. Occupational Standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs fault in electrical wiring, etc.) and they are usually defined by employers following procedures agreed upon by all stakeholders. Education and training standards are developed from the activities defined in occupational standards, and they include learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him or her to function at an agreed level in an occupation. Education and Training standards are used to define curricula in training institutions. It is however critical that there must be a direct link between the Occupational Standards and the training standards to respond to demands of the labour market.

In TET delivery, Tanzania adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the Occupational Standards. Occupational Standards are thus the starting point for developing competency-based training (CBET) programmes. TET institutions will be required to benchmark their curricula with relevant Occupational Standards.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and

technical education and training (TET).

The Cyber Security Technician Occupation has its own set of occupational standards. The document explains how the Occupational Standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The Occupational Standards development process began with an examination of major documents that guide Tanzanian skill development. The *10-year National Skills Development Strategy (2016-2026)* was one of the documents reviewed, and it outlined six (6) economic sectors that should be prioritized when developing skills development programmes.

These sectors include: Transport and Logistics, Tourism and Hospitality, Agribusiness, Construction, Energy and ICT. NACTE labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a workshop comprised of experts and educators with substantial knowledge and experience in the occupation conducted an occupational analysis utilizing the DACUM approach to produce the occupational profile. The analysis resulted in DACUM Charts, which are attached as **Appendix 1** to this document.

The Occupational Standards were then developed. Experts in Occupational Analysis and the Development of Occupational Standards facilitated the workshop. Interviews, online surveys, and a stakeholder forum were used to validate the Occupational Standards. Engineers, supervisory technicians on the job, and experienced Cyber Security Technicians were key informants in the survey to discover occupational trends. The information was used to gain insight from the workplaces regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation. A total of ...... online surveys were completed by experts from the labour market across the country. Apart from the survey aiding in defining the scope for the occupational analysis, they also served to engage a wide cross-section of experts in the occupation. Apart from this, the stakeholders' forum was attended by ... participants from different parts of the country representing various companies.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR CYBER SECURITY TECHNICIANS

The standards cover a broad range of duties and tasks that can be performed by a Cyber Security Technician. However, the occupational standards are not meant to replace individual job descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Cyber Security Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations,

other individuals may be employed or designated to perform specific tasks.

The Cyber Security Technicians shall install operating systems and applications on computers, use office applications, install and deploy network devices and assist in network security operation and maintenance under the supervision of engineers. Generally, the Cyber Security Technician performs the following responsibilities:

a) Windows/Linux operating system installation, application, and operation

b) Office information processing

c) Installation and configuration of network device

d) Assistance in network security operation and maintenance

e) Installation and configuration of cyber security device

f) System safety operation

g) Data storage and backup operation

h) Database operation

i) Network safety consciousness

j) Network security operation and maintenance

k) Analysis on the security logs

l) Vulnerability detection and reinforcement

m) Deployment and debugging of safety device

The Occupational Standards have been clustered into NTA qualification levels, i.e. NTA 4, 5 and 6.

4.0. VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR CYBER SECURITY TECHNICIAN – NTA 4

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	APPLICATION AND OPERATION OF OPERATING SYSTEMS	**DUTY NO.**	401
TASK TITLE	WINDOWS/LINUX OPERATING SYSTEM INSTALLATION	**TASK NO.**	4011
PERFORMANCE CRITERIA	The person performing this task must be able to install the Windows/Linux operating system as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. U disks; 3. Internet; 4. Computer operating system (Windows/Linux) images.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Prepare a U disk and a system activation code; 2. Check whether the computer hardware meets the installation requirements of the operating system; 3. Backup important data of the computer; 4. Download operation images; 5. Make U disk boot disks; 6. Enter the BIOS interface of the computer; 7. Set bootable BIOS startup items; 8. Save the BIOS configuration and restart the computer; 9. Select the U disk startup mode; 10. Set relevant installation options and start installation; 11. Restart the system after installation; 12. Activate the operating system; 13. Set account, network, time zone, etc.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Download images; 1.2 Back up data; 1.3 Make U disk boot disks; 1.4 Perform hard disk partitioning and formatting; 1.5 Set BIOS startup items; 1.6 Use the U disk boot disk to install the Windows or Linux operating system. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Principles of choosing Windows or Linux operating system; 2.2 Theories of hard disk partitioning and formatting. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Functions of the operating system; 3.2 Methods of data backup; 3.3 Installation methods of the operating system; 3.4 BIOS startup items;

	3.5 Classifications of the operating system; 3.6 Principles of the operating system. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The computer operating system is installed in accordance with industry standards and user demands.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational safety and health.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	APPLICATION AND OPERATION OF OPERATING SYSTEMS	DUTY NO.	401
TASK TITLE	WINDOWS/LINUX OPERATING SYSTEM INSTALLATION	TASK NO.	4012
PERFORMANCE CRITERIA	The person performing this task must be able to install software as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Network.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Get the software package of Windows applications; 2. Double-click the installation icon of Windows applications; 3. Select the installation directory; 4. Select additional components as needed; 5. Make relevant settings after installation; 6. Update and upgrade Windows applications regularly; 7. Select the Linux software installation method; 8. Get the software package of Linux applications; 9. Set Linux installation options; 10. Make relevant settings after installation; 11. Update and upgrade Linux applications regularly.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Obtain the software packages of applications; 1.2 Install the Windows application; 1.3 Install the Linux application; 1.4 Install and update the drivers that the package depends on; 1.5 Obtain and use the software registration code and the activation code. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Safety of the package source; 2.2 Applicability of the software. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Acquisition methods of the software package; 3.2 Integrity verification of the software package; 3.3 Dependency verification of the software packages; 3.4 Linux software source classification; 3.5 Package naming rules; 3.6 Update methods of the software package; 3.7 Hardware requirements for software installation; 3.8 Software installation package types.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Computer operation skills; 4.3 Customer service skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The software is well managed in accordance with industrial specifications and user demands.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OFFICE INFORMATION PROCESSING	**DUTY NO.**	402
TASK TITLE	DOCUMENT WRITING, TYPOGRAPHY, AND MANAGEMENT	**TASK NO.**	4021
PERFORMANCE CRITERIA	The person performing this task must be able to finish the document writing, typography, and management as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Office software, such as Microsoft Word.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Create, open, input, save and close documents; 2. Perform basic editing such as text selection, insertion and deletion, copy and move, search and replace; 3. Perform basic layout settings such as font formatting, text effect modification, paragraph formatting, document page settings, document background settings, and document columns; 4. Create, modify and decorate tables; 5. Input and edit table data; 6. Sort the data; 7. Insert graphics and images; 8. Create and edit graphics; 9. Use and edit text boxes and WordArt; 10. Create and edit directories and indexes; 11. Protect and print documents.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Operate documents; 1.2 Edit texts; 1.3 Set the layout of documents; 1.4 Edit tables; 1.5 Edit graphics and images. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 WYSIWYG principle of text editing; 2.2 Principles of document protection and sharing; 2.3 Principle of compatibility; 2.4 Reasonable font and format; 2.5 Avoidance of over formatting; 2.6 Compliance with document structures; 2.7 Use of Table of Contents and Headings. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 The general editing function of the document office software (Microsoft Word); 3.2 The formatting function of the document office software (Microsoft Word); 3.3 The layout setting function of the document office software (Microsoft Word);

	3.4 The operating environment of the document office software (Microsoft Word).
	4.0 Essential Skills
	4.1 Communication skills;
	4.2 Computer operation skills;
	4.3 Customer service skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The document operations are completed in accordance with industrial specifications and user demands.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Office document beautification skills; 3. Document layout; 4. Proofreading and review.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OFFICE INFORMATION PROCESSING	**DUTY NO.**	402
TASK TITLE	INFORMATION COLLECTION, PROCESSING AND ANALYSIS	**TASK NO.**	4022
PERFORMANCE CRITERIA	The person performing this task must be able to collect, process analyse information as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Office software, such as Microsoft Excel.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Create, save and exit workbooks and worksheets; 2. Input and edit data; 3. Select, insert, delete, copy, move worksheets and cells; 4. Rename the worksheet; 5. Split and freeze worksheet windows; 6. Format worksheets, including formatting cells, setting column width and row height, setting conditional formatting, using styles, AutoFormat mode, using formworks, etc.; 7. Input and copy formulas from the worksheet; 8. Use common functions; 9. Create, edit, modify, and embellish charts; 10. Establish a data list; 11. Sort, filter, classify and summarize data list contents; 12. Merge data; 13. Create the PivotTable; 14. Perform page setup, print preview, and printing of the worksheet; 15. Create links in the worksheet; 16. Protect and hide workbooks and worksheets.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Operate the worksheet; 1.2 Operate the workbook; 1.3 Set the table format; 1.4 Set the table layout; 1.5 Count and analyse data; 1.6 Make charts and reports. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 WYSIWYG principle of table editing; 2.2 Principles of table protection and sharing; 2.3 Principle of compatibility; 2.4 Reasonable font and format; 2.5 Avoidance of over formatting. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Basic concepts and functions of spreadsheets; 3.2 Basic concepts and operations of workbooks and worksheets; 3.3 Concept of data list. **4.0 Essential Skills** 4.1 Communication skills;

	4.2 Customer service skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The information is collected, processed and analysed in accordance with industrial specifications and user demands.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Spreadsheets beautification skills; 3. Underpinning knowledge of mathematical statistics; 4. Proofreading and review.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OFFICE INFORMATION PROCESSING	**DUTY NO.**	402
TASK TITLE	PRESENTATION PREPARATION	**TASK NO.**	4023
PERFORMANCE CRITERIA	The person performing this task must be able to prepare the presentation as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Office software, such as Microsoft Office and PowerPoint.		

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<tr><td>PRACTICAL PERFORMANCE</td><td>UNDERPINNING KNOWLEDGE</td></tr>
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The person performing this task must be able to do the following:
1. Create, open, close, and save presentations;
2. Edit the layout, insert, move, copy, and delete the slides;
3. Insert and format text, pictures, WordArt, shapes, tables, etc.;
4. Select the theme;
5. Set the PPT background;
6. Design animations, slide-show modes, and transition effects;
7. Package and print the PPT.

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Detailed knowledge about:

1.0 Methods

The person performing this task must be able to explain how to:

1.1 Use the presentation view;

1.2 Make the slides;

1.3 Select the theme;

1.4 Know the methods for setting the PPT background;

1.3 Design the slide-show modes.

2.0 Principles

The person performing this task must be able to explain the following:

2.1 The importance of clear structures and processes;

2.2 Specifications for the use of animation and transition effects;

2.3 Standards for font and font size selection;

2.4 The importance of highlighting key points;

2.5 The importance of attracting audience's attention.

3.0 Theories

The person performing this task must be able to explain the following:

3.1 Basic concepts of the PPT;

3.2 Basic concepts of slide master and template;

3.3 Basic concept of the theme;

3.4 Animation and transition effects;

3.5 Slide-show modes.

4.0 Essential Skills

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	4.1 Communication skills;
	4.2 Computer operation skills;
	4.3 Customer service skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The presentations are completed in accordance with industrial specifications and customer demands.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:**
	1. Occupational health and safety.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	DEPLOYMENT AND INSTALLATION OF NETWORK DEVICES	**DUTY NO.**	403
TASK TITLE	NETWORK DEVICES PUBLICATION	**TASK NO.**	4031
PERFORMANCE CRITERIA	The person performing this task must be able to publish network devices in accordance with the network device instruction, network cable connection, power cable connection safety specifications, and technical requirements.		
RANGE STATEMENT	The task can be performed in indoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Network device unpacking tools; 2. Network device instructions; 3. Cables and network cables required by network devices; 4. Weak current engineering toolboxes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Prepare screwdrivers, art knives, crystal heads, network cables, network cable crimpers and other tools; 2. Check the integrity of network device packaging; 3. Check the appearance of network devices; 4. Check the status of the cabinet where the network device is installed; 5. Check the installation space of network devices on the network cabinet; 6. Install and fix the network device on the network cabinet; 7. Connect the network cable; 8. Connect the network device cable; 9. Check the installation and publication of network devices; 10. Label the device with a serial number label or other identification; 11. Organize related device documents, including instructions, warranty cards, receipts, etc.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Check and accept network products; 1.2 Prepare device materials and supports; 1.3 Check the space and condition of the network cabinet; 1.4 Connect the power supply of the device; 1.5 Connect the network cable; 1.6 Check the installation of network devices; 1.7 Identify devices and cables. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Network device unpacking inspection process; 2.2 Safety of device installation; 2.3 Heat dissipation and maintainability; 2.4 Principles of spatial planning; 2.5 Principles of device identification; 2.6 Principles of cable management. **3.0 Theories** The person performing this task must be able to explain the following:

	3.1 Network planning theory and demand analysis;
	3.2 Principle for selecting network device types and specifications;
	3.3 Generic cabling;
	3.4 Network device condition testing plan.
	4.0 Essential Skills
	4.1 Communication skills;
	4.2 Teamwork skills
	4.3 Report writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The network devices are installed in accordance with the application scenarios and requirements of network devices.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational and health safety; 2. Device safety and protection.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	DEPLOYMENT AND INSTALLATION OF NETWORK DEVICES	DUTY NO.	403
TASK TITLE	NETWORK DEVICE CONFIGURATION ASSISTANCE	TASK NO.	4032
PERFORMANCE CRITERIA	The person performing this task must be able to configure network devices in accordance with network topology, network functions, and network security technical requirements.		
RANGE STATEMENT	The task can be performed in indoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Laptops; 2. Configuration cables connecting laptops and network devices; 3. Configuration cables of USB to RJ45 control cable; 4. Terminal simulation software that supports SSH (SSH 1 and SSH 2) protocols, such as SecureCRT or Super Terminal.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select network device configuration cables and network jumpers; 2. Install USB to RJ45 configuration cable drivers for laptops; 3. Install and configure network devices such as SecureCRT or Super Terminal software for laptops; 4. Insert the RJ45 connector of the configuration cable into the console port of the device, and plug the USB interface on the other end of the configuration cable into the USB interface of the computer; 5. Turn on the power supply of the network device; 6. Open the terminal simulation software SecureCRT or Super Terminal on the computer; 7. Configure network device names, ports, IP addresses, routing, and security functions; 8. Save network device configuration; 9. Verify and test the configuration of network devices.	Detailed knowledge about: **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Connect network devices to computers; 1.2 Use terminal software to configure network devices; 1.3 Verify and test device configuration functions. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Process of configuring network devices; 2.2 Remote access protocol; 2.3 Routing principles; 2.4 DHCP principles. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Functions of terminal simulation software; 3.2 Network topology; 3.3 IP address planning; 3.4 Routing protocols and routing tables; 3.5 Switch data forwarding rules; 3.6 Access control lists;

	3.7 Network fault troubleshooting;
	3.8 Methods of verifying network functions.
	4.0 Essential Skills
	4.1 Communication skills;
	4.2 Computer skills;
	4.3 Network technology skills;
	4.4 Teamwork skills;
	4.5 Report writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The relevant configuration of network device is completed in accordance with the configuration requirements.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:**
	1. Occupational safety and health;
	2. Device safety and health.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ASSISTANCE IN NETWORK SECURITY OPERATION AND MAINTENANCE	**DUTY NO.**	404
TASK TITLE	INSTALLATION OF ANTIVIRUS SOFTWARE	**TASK NO.**	4041
PERFORMANCE CRITERIA	The person performing this task must be able to install antivirus software in accordance with technical requirements.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Browsers; 3. Downloaded tools; 4. Software official websites; 5. Antivirus software.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		**UNDERPINNING KNOWLEDGE**	

PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE
The person performing this task must be able to do the following: 1. Download antivirus software installation packages; 2. Run the installation programme; 3. Select installation options; 4. Agree to the license agreement; 5. Select the installation location; 6. Start installing; 7. Complete the installation; 8. Get and use the registration code and the activation code of antivirus software.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Get antivirus software installation packages; 1.2 Install Windows antivirus software programmes; 1.3 Install Linux antivirus software programmes. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Safety of antivirus software; 2.2 Applicability of antivirus software. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Acquisition methods of the antivirus software; 3.2 Integrity verification of the antivirus software; 3.3 Dependence verification of the antivirus software; 3.4 System requirements for the antivirus software; 3.5 Antivirus software installation package types; 3.6 Uninstall methods of the antivirus software.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Report writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The antivirus software is installed as required.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Safety operation of devices.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ASSISTANCE IN NETWORK SECURITY OPERATION AND MAINTENANCE	DUTY NO.	404
TASK TITLE	VIRUS DETECTION AND KILLING	TASK NO.	4042
PERFORMANCE CRITERIA	The person performing this task must be able to detect and kill the virus as required.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Antivirus software.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Choose the method of detection and killing; 2. Scan suspicious documents; 3. Identify the virus; 4. Address detected threats; 5. Set up real-time protection; 6. Complete virus detection and killing; 7. Generate virus detection and killing reports.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Use the antivirus software to complete the overall detection and killing; 1.2 Use the antivirus software to complete the rapid detection and killing; 1.3 Use the antivirus software to complete the custom detection and killing; 1.4 Use the antivirus software to complete the real-time protection setup. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 Principles of virus detection and killing; 2.2 Defense against computer viruses; 2.3 Principles of real-time monitoring; 2.4 Multi-level security strategy. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Virus detection methods; 3.2 Virus prevention plans; 3.3 Virus threat handling plans. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills;

	4.3 Report writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The computer viruses are detected and killed using antivirus software as required.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Device operation and maintenance.

OCCUPATION	CYBER SECURITY TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ASSISTANCE IN NETWORK SECURITY OPERATION AND MAINTENANCE	**DUTY NO.**	404
TASK TITLE	VIRUS DATABASE UPDATE THROUGH SYSTEM UPDATE	**TASK NO.**	4043
PERFORMANCE CRITERIA	The person performing this task must be able to update the database of antivirus software in accordance with technical requirements.		
RANGE STATEMENT	The task can be performed in indoor and outdoor offices under the supervision of Senior Technicians. The tools and equipment to be used include: 1. Computers; 2. Antivirus software.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Open the antivirus software; 2. Enter the setting interface of the antivirus software; 3. Find update or upgrade options; 4. Select the virus database update method; 5. Check whether the virus database needs to be updated; 6. Check whether the vulnerability library needs to be updated; 7. Start downloading, installing and updating.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Configure antivirus software update methods; 1.2 Update the antivirus software virus database. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 In-time update; 2.2 Regularly update; 2.3 Diversity detection; 2.4 Resource optimization; 2.5 Legality verification. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Principles of incremental update of virus database; 3.2 Timeliness of virus database update; 3.3 Integrity of virus database update; 3.4 Accuracy of virus database update; 3.5 Efficiency of virus database update. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Network maintenance skills;

	4.4 Report writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The software is used as required.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety.

TABLE 1:   DACUM CHARTS FOR CYBER SECURITY TECHNICIAN - NTA 4

DUTIES	TASKS	ENABLERS
1.0 Application and operation of operating systems	1.1 Windows/Linux operating system installation. 1.2 Windows/Linux operating system installation.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Using safety operation manual of computers · Using operating systems and applications · Skills for writing documents **Tools and equipment** · Computers · Internet · U disks **Materials** · Operation manuals for computers conforming to technical requirements **Requirements for employees** · Teamwork spirit · Integrity · Time management · Emphasis on commitment · Safety consciousness · Law-abiding consciousness
2.0 Office information processing	2.1 Document writing, typography, and management. 2.2 Information collection, processing and analysis. 2.3 Make PPT.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Using safety operation manual of computers · Underpinning knowledge of operating systems · Underpinning knowledge of office software · Underpinning knowledge of internet applications **Tools and equipment** · Computers · Office software

DUTIES	TASKS	ENABLERS
		· Internet **Materials** · Operation manuals for computers conforming to technical requirements **Requirements for employees** · Teamwork spirit · Integrity · Time management · Emphasis on commitment · Safety consciousness · Law-abiding consciousness
3.0 Deployment and installation of network devices	3.1 Network devices publication. 3.2 Network device configuration assistance.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Computer network technology · Network product configuration management technology · Skills for writing documents **Tools and equipment** · Computers · Network device configuration lines · Serial ports to USB control cable configuration cable drivers · Software for configuring network devices **Materials** · Network device instructions **Requirements for employees** · Teamwork spirit · Integrity · Time management · Emphasis on commitment · Safety consciousness · Law-abiding consciousness

DUTIES	TASKS	ENABLERS
4.0 Assistance in network security operation and maintenance	4.1 Installation of antivirus software. 4.2 Virus detection and killing. 4.3 Virus database update through system update.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Using safety operation manual of computers · Skills and knowledge of the network safety of virus prevention and detection and killing · Skills and knowledge of the operating system and application vulnerability remediation · Skills for writing documents **Tools and equipment** · Computers · Antivirus software · Office software · Internet **Materials** · Operation manuals for computers conforming to technical requirements **Requirements for employees** · Teamwork spirit · Integrity · Time management · Emphasis on commitment · Safety consciousness · Law-abiding consciousness