



COMPETENCY STANDARD
FOR
NETWORK ADMINISTRATION
(ICT Sector)

Level: 05

Competency Standard Code: CS-ICT-NA-L5-EN-V1



National Skills Development Authority
Prime Minister's Office
Government of the People's Republic of Bangladesh

Copyright

National Skills Development Authority
Prime Minister's Office
Level: 10-11, Biniyog Bhaban,
E-6 / B, Agargaon, Sher-E-Bangla Nagar Dhaka-1207, Bangladesh.
Email: ec@nsda.gov.bd
Website: www.nsd.gov.bd.
National Skills Portal: <http://skillsportal.gov.bd>

National Skills Development Authority (NSDA) is the owner of this document. Other interested parties must obtain written permission from NSDA for reproduction of information in any manner, in whole or in part, of this Competency Standard, in English or other language.

This Competency Standard for Network Administration is a document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the document for providing training consistent with the requirements of industry in order to meet the qualification of individuals who graduated through the established standard via competency-based assessment for a relevant job.

This document has been developed by NSDA in association with ICT Sector ISC, industry representatives, academia, related specialist, trainer and related employee.

Public and private institutions may use the information contained in this standard for activities benefitting Bangladesh.

Introduction

The NSDA aims to enhance an individual's employability by certifying completeness with skills. NSDA works to expand the skilling capacity of identified public and private training providers qualitatively and quantitatively. It also aims to establish and operationalize a responsive skills ecosystem and delivery mechanism through a combination of well-defined set of mechanisms and necessary technical supports.

Key priority economic growth sectors identified by the government have been targeted by NSDA to improve current job skills along with existing workforce to ensure required skills to industry standards. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training program. "Network Administration" is selected as one of the priority occupations of ICT Sector. This standard is developed to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

Generally, a competency standard informs curriculum, learning materials, assessment and certification of trainees enrolled in Skills Training. Trainees who successfully pass the assessment will receive a qualification in the National Skills Qualification Framework (NSQF) under Bangladesh National Qualification Framework (BNQF) and will be listed on the NSDA's online portal.

This competency standard is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements. A series of stakeholder consultations, workshops were held to develop this document.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

Overview

A competency standard is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of representative from NSDA, Key Institutions, ISC, and industry experts to identify the competencies required of an occupation in Informal Sector.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. CS acknowledge that people can achieve technical and vocational competency in many ways by emphasizing what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of a number of units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guides

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements
- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide.

Competency Standards for National Skills Certificate – Level-5 in Network Administration in ICT Sector

Level Descriptors of NSQF (BNQF 1-6)

Level & Job Classification	Knowledge Domain	Skills Domain	Responsibility Domain
6-Mid-Level Manager/ Sub Assistant Engineer	Comprehensive actual and theoretical knowledge within a specific work or study area with an awareness of the validity and limits of that knowledge, able to analyse, compare, relate and evaluate.	Specialised and wider range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems. Communicate professional issues and solutions to the team and to external partners/users.	Work under broad guidance and self-motivation to execute strategic and operational plan/s. Lead lower-level management. Diagnose and resolve problems within and among work groups.
5-Supervisor	Broad knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to scrutinize and break information into parts by identifying motives or causes.	Broad range of cognitive and practical skills required to generate solutions to specific problems in one or more work or study areas. Communicate practice-related problems and possible solutions to external partners.	Work under guidance of management and self-direction to resolve specific issues. Lead and take responsibility for the work and actions of group/team members. Bridge between management.
4-Highly Skilled Worker	Broader knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to solve problems to new situations by comparing and applying acquired knowledge.	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information. Communicate using technical terminology and IT technology with partners and users as per workplace requirements.	Work under minimal supervision in specific contexts in response to workplace requirements. Resolve technical issues in response to workplace requirements and lead/guide a team/ group.
3-Skilled Worker	Moderately broad knowledge in a specific work or study area, able to perceive ideas and abstract from drawing and design according to workplace requirements.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools. Communicate with his team and limited external partners upholding the values, nature and culture of the workplace	Work or study under supervision with considerable autonomy. Participate in teams and responsible for group coordination.
2-Semi Skilled Worker	Basic understanding of underpinning knowledge in a specific work or study area, able to interpret and apply common occupational terms and instructions.	Skills required to carry out simple tasks, communicate with his team in the workplace presenting and discussing results of his work with required clarity.	Work or study under supervision in a structured context with limited scope of manipulation
1 –Basic Skilled Worker	Elementary understanding of ability to interpret the underpinning knowledge in a specific study area, able to interpret common occupational terms and instructions.	Specific Basic skills required to carry out simple tasks. Interpret occupational terms and present the results of own work within guided work environment/ under supervision.	Work under direct supervision in a structured context with limited range of responsibilities.

List of Abbreviations

NSDA	National Skills Development Authority
BMET	Bureau of Manpower Employment and Training
ILO	International Labor Organization
ISC	Industry Skills Council
NPVC	National Pre-Vocation Certificate
NSQF	National Skills Qualifications Framework
PPP	Public Private Partnership
SCVC	Standards and Curriculum Validation Committee
SEIP	Skills for Employment Investment Program
STP	Skills Training Provider
UoC	Unit of Competency
GUI	Graphical User Interface
ESD	Electro-static Discharge
ICT	Information and Communication Technology
OSH	Occupational Safety and Health
PPE	Personal Protective Equipment
RAM	Random Access Memory
USB	Universal Serial Bus

Approved by
----th Executive Committee (EC) Meeting of NSDA
Held on -----

Deputy Director (Admin)
and
Officer of Secretarial Duties for EC Meeting
National Skills Development Authority

Contents

Copyright.....	i
Introduction	ii
Overview	iii
Level Descriptors of NSQF (BNQF 1-6)	iv
List of Abbreviations.....	v
Course Structure	1
Units & Elements at Glance	2
Generic Competencies.....	5
GU011L4V1: Lead Small Team	6
GU016L4V1: Develop Entrepreneurship Skills.....	9
GU017L4V1: Support Innovation and Manage Change	13
Sector Specific Competencies	16
SUICT04L3V1: Comply to Ethical Standards in the ICT Workplace.....	17
Occupation Specific Competencies	19
OUNA01L5V1: Connect Physical and Logical Network.....	20
OUNA02L5V1: Perform Router Configuration.....	23
OUNA03L5V1: Perform Switch Configuration.....	26
OUNA04L5V1: Establish Network Security Measures	28
OUNA05L5V1: Deploy Next Generation Firewall	30
Development of Competency Standard	32
Validation of Competency Standard.....	33
Workshop Minutes.....	34

**Competency Standards for National Skill Certificate – 5 in
Network Administration in ICT Sector**

Course Structure

SL	Unit Code and Title		UoC Level	Nominal Duration (Hours)
Generic Competencies				45
1.	GU011L4V1	Lead Small Team	4	20
2.	GU016L4V1	Develop Entrepreneurship Skills	4	15
3.	GU017L4V1	Support Innovation and Manage Change	4	10
Sector Specific Competencies				15
4.	SUICT04L3V1	Comply to Ethical Standards in the ICT Workplace	3	15
Occupation Specific Competencies				300
5.	OUNA01L5V1	Connect Physical and Logical Network	5	40
6.	OUNA02L5V1	Perform Router Configuration	5	70
7.	OUNA03L5V1	Perform Switch Configuration	5	70
8.	OUNA04L5V1	Establish Network Security Measures	5	60
9.	OUNA05L5V1	Deploy Next Generation Firewall	5	60
Total Nominal Learning Hours				360

Units & Elements at Glance

Generic Competencies

Code	Unit of Competency	Elements of Competency	Duration (Hours)
GU011L4V1	Lead Small Team	<ol style="list-style-type: none">1. Provide team leadership2. Assign responsibilities3. Set performance expectations for team members4. Supervise team performance	20
GU016L4V1	Develop Entrepreneurship Skills	<ol style="list-style-type: none">1. Recognize concept of Entrepreneurship2. Explain functions of Entrepreneur3. Explain role of Entrepreneur in Economic Development4. Plan for Business and marketing5. Explain small business6. Interpret reasons of failure and success in small business	15
GU017L4V1	Support Innovation and Manage Change	<ol style="list-style-type: none">1. Identify needs for innovation in the workplace2. Apply creative approach and solution3. Support flexible and innovative ways of working4. Adapt to emerging technological changes and opportunities	10

Sector Specific Competencies

Code	Unit of Competency	Elements of Competency	Duration (Hours)
SUICT04L3V1	Comply to Ethical Standards in the ICT Workplace	<ol style="list-style-type: none">1. Uphold the requirements of clients2. Deliver quality products and services3. Maintain professionalism at workplace4. Maintain workplace code of conduct.	15

Occupation Specific Competencies

Code	Unit of Competency	Elements of Competency	Duration (Hours)
OUNA01L5V1	Connect Physical and Logical Network	<ol style="list-style-type: none"> 1. Establish physical network connection 2. Setup Internet Protocols Address 3. Perform Subnetting 4. Perform summarization and superneting 	40
OUNA02L5V1	Perform Router Configuration	<ol style="list-style-type: none"> 1. Setup router for basic operation 2. Perform routing 3. Perform access control and address translation 4. Configure router failover and load balancing 5. Perform automation 	70
OUNA03L5V1	Perform Switch Configuration	<ol style="list-style-type: none"> 1. Configure and manage layer-2 switch 2. Configure layer-3 switch 	70
OUNA04L5V1	Establish Network Security Measures	<ol style="list-style-type: none"> 1. Manage password 2. Secure remote access 3. Configure access control and security protocol 4. Manage backup & recovery 	60
OUNA05L5V1	Deploy Next Generation Firewall	<ol style="list-style-type: none"> 1. Configure next generation firewall 2. Configure security level 3. Perform security inspection 4. Configure security profile 5. Configure object and NAT 6. Perform firewall clustering 7. Prepare log report 	60

Generic Competencies

Unit Code and Title	GU011L4V1: Lead Small Team
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to lead small team. It specifically includes providing team leadership, assigning responsibilities, setting performance expectations for team members and supervising team performance.
Nominal Hours	20 Hours
Elements of Competency	Performance Criteria Bold & Underlined terms are elaborated in the Range of Variables
1. Provide team leadership	1.1 <u>Work requirements</u> are identified and presented to team members 1.2 Reasons for instructions and requirements are communicated to team members 1.3 <u>Team members' queries and concerns</u> are recognized, discussed and dealt with
2. Assign responsibilities	2.1 Duties, and responsibilities are allocated having regard to the skills, knowledge and attitudes required to properly undertake the assigned task 2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs and according to assignment requirements 3.2 Performance expectations are based on individual team members' duties and area of responsibility 3.3 Performance expectations are discussed and directed to implement in the workplace
4. Supervise team performance	4.1 <u>Monitoring of performance</u> are taken place against defined performance criteria and / or assignment instructions and corrective action taken if required 4.2 Team members are provided <u>feedback</u> , positive support and advice on strategies to overcome any deficiencies 4.3 <u>Performance issues</u> which cannot be rectified or addressed within the team are referenced to appropriate personnel 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on clients' / customers' needs and satisfaction 4.5 Team operations are monitored to ensure that employer / client needs and requirements are met 4.6 Follow-up communication is provided on all issues affecting the team 4.7 All relevant documentation is completed
Range of Variables	

Variable	Range (may include but are not limited to):
1. Work requirements	1.1 Client Profile 1.2 Assignment instructions
2. Team member's queries and concerns	2.1 Roster 2.2 Shift details
3. Monitoring of performance	3.1 Formal process 3.2 Informal process
4. Feedback	4.1 Formal process 4.2 Informal process 4.3 Sandwich process
5. Performance issues	5.1 Work output 5.2 Work quality 5.3 Team participation 5.4 Compliance with workplace protocols 5.5 Safety 5.6 Customer service
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 maintained or improved individuals and / or team performance given a variety of possible scenario 1.2 assessed and monitored team and individual performance against set criteria 1.3 represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4 allocated duties and responsibilities, having regard to individual's knowledge, skills and attitude and the needs of the tasks to be performed 1.5 set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Underpinning knowledge	2.1 Company policies and procedures 2.2 Relevant legal requirements 2.3 How performance expectations are set 2.4 Methods of Monitoring Performance 2.5 Client expectations 2.6 Team members' duties and responsibilities
3. Underpinning skills	3.1 Informal performance counselling skills 3.2 Team building skills 3.3 Negotiating skills

4. Required attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Tidiness and timeliness 4.7 Respect for rights of peers and seniors in workplace 4.8 Communicate with peers and seniors in workplace
5. Resource implications	The following resources must be provided: 5.1 Workplace (actual or simulated) 5.2 Tools, equipment and facilities appropriate to processes or activity 5.3 Materials relevant to the proposed activity 5.4 Equipment and outfits appropriate in applying safety measures 5.5 Relevant drawings, manuals, codes, standards and reference material
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1. Competency assessment must be done in NSDA accredited center. 7.2. Assessment should be done by NSDA certified/ nominated assessor
<p>Accreditation Requirements</p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

Unit Code and Title	GU016L4V1: Develop Entrepreneurship Skills
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to develop entrepreneurship skills. It specially includes recognizing concept of entrepreneurship, explaining functions of entrepreneur, explaining role of entrepreneur in economic development, planning for business and marketing, explaining small business and Interpreting reasons of failure and success in small business.
Nominal Hours	15 Hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables
1. Recognize concept of Entrepreneurship	1.1 Entrepreneurship is defined 1.2 Advantages of entrepreneurship is discussed 1.3 Strength, Weakness, Opportunity and Threat (SWOT) is analyzed for business 1.4 Methods of operating salon in profitable manner is discussed 1.5 Importance of controlling expenses and cost saving methods is discussed 1.6 The units of sale for different types of services are Identified 1.7 Future prospects of business are Identified
2. Explain functions of Entrepreneur	2.1 Important aspects of business including selection business place, services to render & monetary matters are discussed 2.2 Different business situation and importance of compiling data regarding clients, income, expenses are discussed 2.3 Goals for sales of business is identified 2.4 Source and way of financing in small business is identified 2.5 Method for building a professional team is discussed
3. Explain role of Entrepreneur in Economic Development	3.1 Plan to play vital role to boost economy by creating and providing new job opportunities are discussed 3.2 Method to develop hiring plan as per need of business and importance of depositing contributions in government departments are discussed 3.3 Methods to generate maximum profits and expansion plan of business is discussed
4. Plan for Business and marketing	4.1 Business plan is prepared as per market demands. 4.2 Areas of business or services which are more profitable

	<p>and popular in clients are identified</p> <p>4.3 Services and products offered by the competitors is analyzed and business strategy is made accordingly</p> <p>4.4 Estimate of finance is prepared for required business</p> <p>4.5 Methods for attaining knowledge of current market trends are discussed</p>
5. Explain small business	<p>5.1 Small business is defined</p> <p>5.2 Money management and cash flows are explained</p> <p>5.3 Importance of customer satisfaction is discussed</p> <p>5.4 Customers comfort policies is explained</p> <p>5.5 Importance of maintenance of record of purchases, sales, inventory and list of regular customers are explained</p> <p>5.6 Branding of business is explained</p> <p>5.7 Methods to build team of honest workers on long term basis are explained</p>
6. Interpret reasons of failure and success in small business	<p>6.1 Fields of business causing loss is identified</p> <p>6.2 Key factor for selection of proper suitable location of business place easily accessible is discussed for customers.</p> <p>6.3 Factors annoying customers by action of workers are Identified</p> <p>6.4 Control of utility bills especially turning off extra lights and ACs when client is not in service discussed</p> <p>6.5 Importance to make purchases of best items keeping in view quality, quantity and prices are explained</p> <p>6.6 Communicate with the customers in effective conversation and good relations are discussed</p> <p>6.7 Time schedule is prepared for self-workers and services</p>
Range of Variables	
Variables	Range (may include but not limited to):
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical Aspects of Competency	<p>Assessment required evidence that the candidate:</p> <p>1.1 recognized concept of entrepreneurship</p> <p>1.2 functioned of entrepreneur</p> <p>1.3 explained role of entrepreneur in economic development</p> <p>1.4 planned for business and marketing</p> <p>1.5 explained small business</p> <p>1.6 interpreted reasons of failure and success in small business</p>

<p>2. Underpinning Knowledge</p>	<p>2.1 Describe the methods of running salon on profitable manner.</p> <p>2.2 Identify the cost saving methods.</p> <p>2.3 List the services generally offered in salon.</p> <p>2.4 Illustrate factors for forecasting of future market trends</p> <p>2.5 Explain the planning techniques for services, rates and location identification for better business opportunities.</p> <p>2.6 Describe the importance of client's data and skills for efficient financial controls of business.</p> <p>2.7 Define the techniques for Increasing sales of business</p> <p>2.8 Explain the Importance of team building.</p> <p>2.9 Explain the role of creating job opportunities in economy.</p> <p>2.10 Explain the importance of appropriate and suitable work force for the business, prevailing labor laws and prevailing taxes levied on the business.</p> <p>2.11 Describe the important factors for expansion plan according to demand and supply position prevailing in market.</p> <p>2.12 Explain market trends</p> <p>2.13 Define profitable and popular services of business.</p> <p>2.14 Describe the procedure of implementation of business and marketing plan.</p> <p>2.15 Calculate Capital requirements for business.</p> <p>2.16 State the possible sources of finance</p> <p>2.17 Define the techniques of money management.</p> <p>2.18 Describe the importance of customer's satisfaction and demands of clients.</p> <p>2.19 Explain the Importance of customer's comfort level in terms of prices and services.</p> <p>2.20 Illustrate the techniques of maintaining records of purchases, sales and client's data.</p> <p>2.21 Describe the major Fields of business causing loss.</p> <p>2.22 Explain the importance of easily accessible location for setting up business.</p> <p>2.23 Define the importance of good behavior of workers with the customers.</p> <p>2.24 Explain the methods of cost saving steps in salon.</p> <p>2.25 Illustrate method of purchases of materials competitively and cost efficiently</p> <p>2.26 Describe the importance of pleasant communication skills.</p> <p>2.27 Explain the importance of time management and the role of proper time</p>
----------------------------------	--

3. Underpinning Skills	3.1 Applying skills of communicating 3.2 Applying skills of literacy and numeracy 3.3 Analyzing business environment 3.4 Planning for own business 3.5 Using the effective tools to make presentations 3.6 Identifying business places 3.7 Identifying target customers 3.8 Maintaining business plan 3.9 Handling business promoting media and equipment
4. Required Attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Tidiness and timeliness 4.7 Respect for rights of peers and seniors in workplace 4.8 Communication with peers and seniors in workplace
5. Resource Implications	The following resources must be provided: 5.1 Workplace (actual or simulated) 5.2 Fire extinguisher 5.3 Uninterrupted power supply 5.4 Internet facilities 5.5 Adequate Surveillance devices 5.6 Manuals, catalogs and magazine 5.7 Competency Based Learning Materials (CBLM)
6. Methods of Assessment	Methods of assessment may include but not limited to: 6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of Assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
<p>Accreditation Requirements</p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

Unit Code and Title	GU017L4V1: Support Innovation and Manage Change
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to support innovation and manage change. It specifically includes identifying needs for innovation in the workplace, applying creative approaches and solution, supporting flexible and innovative ways of working and adapting to emerging technological changes and opportunities
Nominal Hours	10 Hours
Elements of Competency	Performance Criteria <u>Bold and underlined</u> terms are elaborated in the range of variables.
1. Identify needs for innovation in the workplace	1.1. The need for <u>innovation</u> in scope of work is recognized 1.2. The value of <u>innovative practices</u> in the workplace is recognized 1.3. Existing way of working in the workplace are interpreted. 1.4. Drawbacks of existing way of working are identified. 1.5. Benefits of change are identified to make it consistent with organizational requirements 1.6. Realistic timelines and targets for implementation of changes are set.
2. Apply creative approach and solution	2.1 Opportunities and creative approaches to implement innovation practices are identified 2.2 Creative approaches of coworkers pertaining to work practices are analyzed and incorporated 2.3 Innovation in accordance with organizational requirements changes are implemented
3. Support flexible and innovative ways of working	3.1 Maximum innovative opportunities are promoted. 3.2 Work assignments to facilitate innovative work skills are organized. 3.3 Team members are provided with guidance and coaching on innovation in the workplace. 3.4 Models of innovative work practice are provided and discussed 3.5 Appropriate environment for learning and innovation is maintained.
4. Adapt to emerging technological changes and opportunities	4.1 Usages of different <u>technologies</u> is determined based on job requirements. 4.2 Appropriate technology is selected as per work specifications. 4.3 Relevant technology is effectively used in carrying out functions. 4.4 Appropriate implementation tools are used as per task requirement.
Range of Variables	
Variables	Range (may include but not limited to)

1. Innovation	<ul style="list-style-type: none"> 1.1 New ideas 1.2 Different ideas 1.3 New methods of doing work 1.4 Use of new Technology
2. Innovative practices	<ul style="list-style-type: none"> 2.1. Self-directed support to implement new ideas 2.2. Collaborative arrangement to apply new method of working 2.3. Making scope of work more efficient to use new technology
3. Technologies	<ul style="list-style-type: none"> 3.1 Office technology 3.2 Industrial technology 3.3 System technology 3.4 Information technology 3.5 Training technology
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 identified need for innovation in the area of work 1.2 recognized innovative and creative ideas 1.3 supported individuals and people to access flexible and innovative ways of working 1.4 analyzing and evaluating problems associated with change 1.5 developing processes to introduce change 1.6 gathering evidence on the effect of change 1.7 presenting information on the causes and introduction of the change 1.8 selected appropriate technology consistent with work requirements 1.9 applied relevant technology 1.10 maintained and enhanced operative ability of relevant technology
2. Underpinning Knowledge	<ul style="list-style-type: none"> 2.1 Definition of innovation 2.2 Current practice in own scope of work 2.3 Workplace procedures 2.4 Support required to generate creative ideas 2.5 Difference between innovation and creativity 2.6 Common effects of change and innovation in the workplace 2.7 Industrial and organizational context of change 2.8 Organization's policies, plans, procedures and structure 2.9 Knowledge of resources required by the organization's operations 2.10 Awareness on technology and its function 2.11 Operating instructions 2.12 Applicable software 2.13 Company policy in relation to relevant technology

	2.14 Technology adaptability
3. Underpinning Skills	3.1 Identifying resources required for creativity and innovation 3.2 Contributing to brainstorming session 3.3 Identifying issues and concerns of one's scope of work 3.4 Encouraging co-workers to generate and develop ideas 3.5 Evaluating potential obstacles to and opportunities for creativity and innovation 3.6 Sharing of best practices related to innovation and creativity 3.7 Applying relevant technology 3.8 Using update machine and Software 3.9 Acquiring troubleshooting skills
4. Underpinning attitudes	4.1 Attitude of sharing and participation 4.2 Tidiness, timeliness and orderliness 4.3 Sincerity and honesty to duties 4.4 Adaptability
5. Resource implications	The following resources must be provided: 5.1. Relevant tools, Equipment, Software and Facilities needed to perform the activities. 5.2. Required learning materials.
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
Accreditation Requirements Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.	

Sector Specific Competencies

Unit Code and Title	SUICT04L3V1: Comply to Ethical Standards in the ICT Workplace
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to comply to ethical standards in the ICT workplace. It specifically includes upholding the requirements of clients, delivering quality products and services, maintaining professionalism at workplace and maintaining workplace code of conduct.
Nominal Hours	15 Hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables
1. Uphold the requirements of clients	1.1 Clients' requirements are identified. 1.2 Confidentiality of information is maintained in accordance with workplace policies/organizational policies/national legislation. 1.3 Potential conflicts of interest are identified and involved parties of potential conflicts are notified. 1.4 Proprietary rights of client/customer is asserted.
2. Deliver quality products and services	2.1. Products and services are provided according to the clients' requirements. 2.2. Work is completed as per standards. 2.3. Quality processes are implemented when developing products and services.
3. Maintain professionalism at workplace	3.1 Work processes are delivered as per standards. 3.2 Skills, knowledge and qualifications are presented in a professional manner. 3.3 Services and products developed by self and others are delivered as per workplace standard. 3.4 Unbiased and objective information are provided to clients. 3.5 Realistic estimates for time, cost and delivery of outputs are presented during negotiation.
4. Maintain workplace code of conduct.	4.1 Workplace code of conduct are interpreted 4.2 Workplace code of conduct is followed.
Range of variables	
Variables	Range (may include but not limited to)
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 asserted proprietary rights of client/customer. 1.2 completed work to industry and international standards. 1.3 implemented quality processes when developing products and services. 1.4 delivered services and products developed by self and others. 1.5 provided unbiased and objective information to clients. 1.6 followed workplace code of conduct.

2. Underpinning knowledge	<ul style="list-style-type: none"> 2.1. Corporate code of confidentiality of information 2.2. organizational policies, national legislation and workplace policies in relation to IT sector 2.3. Law and regulations pertaining to proprietary rights 2.4. Quality processes for products and services 2.5. Procedure of provided to client information 2.6. Method of estimating for time, cost and delivery products and services 2.7. Workplace code of conduct in IT sector
3. Underpinning Skills	<ul style="list-style-type: none"> 3.1. Upholding confidentiality of information in accordance with organizational policies, national legislation and workplace policies 3.2. Asserting proprietary rights of client/customer 3.3. Completing work in accordance with industry and international standards 3.4. Implementing quality processes when developing products and services 3.5. Delivering correctly services and products developed by self and others 3.6. Providing unbiased and objective information are to clients. 3.7. Presenting realistic estimates for time, cost and delivery of outputs during negotiation 3.8. Following workplace code of conduct
4. Underpinning Attitudes	<ul style="list-style-type: none"> 4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Tidiness and timeliness 4.7 Respect for rights of peers and seniors in workplace 4.8 Communication with peers and seniors in workplace.
5. Resource Implications	<ul style="list-style-type: none"> 5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of Assessment	<ul style="list-style-type: none"> 6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of Assessment	<ul style="list-style-type: none"> 7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

Occupation Specific Competencies

Unit Code and Title	OUNA01L5V1: Connect Physical and Logical Network
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to connect physical and logical network. It specifically includes establishing physical network connection, setting up internet protocols address, performing subnetting, performing summarization and supernetting.
Nominal Hours	40 hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables.
1. Establish physical network connection	1.1 Networking <u>tools and equipment</u> are identified. 1.2 <u>Physical network interfaces</u> are recognized. 1.3 Hosts and respective interfaces are selected for physical connection. 1.4 <u>Networking devices</u> and <u>transmission media</u> are selected for the connection. 1.5 Tools and equipment are used to prepare media for connection. 1.6 Hosts and devices are connected using the transmission media.
2. Setup Internet Protocols Address	2.1 Internet protocol (IP) is interpreted. 2.2 Version of IP address are described. 2.3 Classifications of IP address are described. 2.4 IP address is set up hosts/ devices. 2.5 Subnet mask is set on devices. 2.6 Default gateway is set on devices. 2.7 Domain Name System (DNS) server IP address is set on devices. 2.8 <u>Connectivity testing</u> is performed and resolved if required.
3. Perform Subnetting	3.1 <u>Subnetting</u> is determined as per workplace requirements. 3.2 Subnetting is performed following standard procedure. 3.3 Classless Inter Domain Routing (CIDR) is interpreted. 3.4 CIDR is performed following standard procedure.
4. Perform summarization and supernetting	4.1 Summarization and supernetting are interpreted. 4.2 Summarization is applied following standard procedure and workplace requirements. 4.3 Supernetting is performed following standard procedure.
Range of Variables	
Variables	Range (may include but not limited to)
1. Tools and equipment	1.1 Crimpers 1.2 Pliers 1.3 Punch-down tool 1.4 Network Cables 1.5 Connectors 1.6 Cable Tester 1.7 Keystone modules

	1.8 Faceplate 1.9 Labeler 1.10 Power meter 1.11 Media Converter/ ONU/ SFP module
2. Physical network interfaces	2.1. Console port 2.2. Serial port 2.3. USB port 2.4. RJ-45 port 2.5. RJ-11 port 2.6. Optical ports
3. Networking devices	3.1 Router 3.2 Switch 3.3 Bridge 3.4 HUB 3.5 Repeater 3.6 Modem 3.7 Wireless LAN Controller 3.8 Access point (AP) 3.9 Firewall
4. Transmission media	4.1 Copper cable 4.2 Optical Fiber 4.3 Wireless
5. Connectivity testing	5.1. PING 5.2. Traceroute 5.3. DNS Lookup 5.4. Address Resolution Protocol (ARP)
6. Subnetting	6.1. Fixed Length Subnet Mask (FLSM) 6.2. Variable Length Subnet Mask (VLSM)
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 established physical network connection 1.2 performed subnetting 1.3 performed summarization and supernetting
2. Underpinning knowledge	2.1 Network devices and hosts 2.2 Network type 2.3 Topologies 2.4 Network media 2.5 Network model 2.5.1 OSI Model 2.5.2 TCP/IP Model 2.6 DNS Server 2.7 DHCP Server

3. Underpinning skills	3.1 Setting IP Address 3.2 Setting subnet mask 3.3 Setting default gateway 3.4 Testing IP address
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Addressing and accepting feedback 4.7 Tidiness and timeliness 4.8 Respect for rights of peers and seniors in workplace 4.9 Communication with peers and seniors in workplace
5. Resource Implications	5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of assessment	6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
<p>Accreditation Requirements</p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

Unit Code and Title	OUNA02L5V1: Perform Router Configuration
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to perform router configuration. It specifically includes setting up router for basic operation, performing routing, configuring router failover and load balancing and performing automation.
Nominal Hours	70 hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables.
1. Setup router for basic operation	1.1 <u>Router Hardware</u> is identified and boot process is interpreted. 1.2 The router's firmware is updated. 1.3 Device security is interpreted and applied 1.4 Username and service password are created and encrypted using console. 1.5 Remote access configuration (Telnet / SSH) is performed. 1.6 Router gateway is configured and connected. 1.7 Password break is performed following standard procedure 1.8 DHCP server and DHCP relay agent is configured. 1.9 Running and startup configuration is saved.
2. Perform routing	2.1 Static routing is used following standard procedure. 2.2 Default routing is applied following standard procedure. 2.3 Distance Vector and Link state Routing protocol is interpreted. 2.4 <u>Types of routing</u> protocol is interpreted 2.5 <u>Dynamic routing</u> is performed 2.6 Fundamental Boarder Gateway Protocol (BGP) is configured.
3. Perform access control and address translation	3.1 Access Control List (ACL) is configured 3.2 <u>Network Address Translation (NAT)</u> is configured.
4. Configure router failover and load balancing	4.1 WAN load balancing is configured on router. 4.2 WAN failover is configured with standard protocols. 4.3 <u>Device failover and load balancing</u> are configured
5. Perform automation	5.1. Network automation is interpreted. 5.2. The components of the network automation are recognized 5.3. Network modules on Python is interpreted. 5.4. Network automation is performed using Python.
Range of Variables	
Variables	Range (may include but not limited to)
1. Router Hardware	1.1 RAM 1.2 ROM 1.3 Nonvolatile RAM (NVRAM) 1.4 Configure register 1.5 CPU 1.6 Flash

2. Types of routing	2.1 Interior Gateway Protocol (IGP) 2.2 Exterior Gateway Protocol (EGP)
3. Dynamic routing	3.1 Routing Information Protocol (RIP) 3.2 Enhanced Interior Gateway Routing Protocol (EIGRP) 3.3 Open Shortest Path First (OSPF)
4. Network Address Translation (NAT)	4.1 Static NAT 4.1.1 Source NAT 4.1.2 Destination NAT 4.2 Dynamic NAT 4.3 PAT/ NAT overload
5. Device failover and load balancing	5.1 Hot Standby Router Protocol (HSRP) 5.2 Gateway Load Balancing Protocol (GLBP) 5.3 Virtual Router Redundancy Protocol (VRRP)
<p>Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent, and recent and meet the requirements of the current version of the Unit of Competency.</p>	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 setup router for basic operation 1.2 performed routing 1.3 performed access control and address translation 1.4 configured router failover and load balancing 1.5 performed automation
2. Underpinning Knowledge	2.1 Router gateway 2.2 Failover 2.3 Load balancing 2.4 Access Control List (ACL) 2.5 Basic Python programming 2.5.1 SYS 2.5.2 Telnetlib 2.5.3 Passwd
3. Underpinning Skills	3.1 Configuring router using commands 3.2 Using gateway 3.3 Updating software and/or firmware 3.4 Creating username and password 3.5 Performing gateway protocol 3.6 Performing network automation
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Addressing and accepting feedback 4.7 Tidiness and timeliness 4.8 Respect for rights of peers and seniors in workplace 4.9 Communication with peers and seniors in workplace

5. Resource implications	5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of assessment	6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor

Accreditation Requirements

Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

Unit Code and Title	OUNA03L5V1: Perform Switch Configuration
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to perform switch configuration. It specifically includes configuring layer-2 and layer-3 switches.
Nominal Hours	70 hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables.
1. Configure and manage layer-2 switch	1.1 <u>Switch Hardware</u> is identified and boot process is interpreted. 1.2 Host name is set up for the particular switch to distinguish it in the network. 1.3 Device security is interpreted and applied 1.4 Username and service password are created and encrypted using console. 1.5 Remote access configuration (Telnet / SSH) is performed. 1.6 IP address is assigned to the switch for management. 1.7 Unused ports are administratively shutdown 1.8 Layer2 Virtual Local Area Network (VLANs) are configured and ports are assigned. 1.9 Switch ports are configured as access and trunk mode 1.10 Running and startup configuration is saved.
2. Configure layer-3 switch	2.1 Inter VLAN routing is configured 2.2 Encapsulation protocol 802.1Q is interpreted and configured 2.3 <u>Looping</u> is mitigated. 2.4 <u>Switch failover and load balancing</u> are configured using Ether channel. 2.5 Switch stacking is interpreted and configured 2.6 MAC Binding is performed. 2.7 Switch automation is performed.
Range of Variables	
Variables	Range (may include but not limited to)
1. Switch Hardware	1.1 RAM 1.2 ROM 1.3 NVRAM 1.4 Configure register 1.5 CPU 1.6 Flash
2. Looping	2.1. Spanning Tree Protocol (STP) 2.2. Rapid Spanning Tree Protocol (RSTP) 2.3. Multiple Spanning Tree Protocol (MSTP)
3. Switch failover and load balancing	3.1 Port Aggregation Protocol (PagP) 3.2 Link Aggregation Control Protocol (LACP)

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 configured and managed layer-2 switch 1.2 configured layer-3 switch
2. Underpinning Knowledge	2.1 Access and trunk mode 2.2 Failover 2.3 Load balancing 2.4 Stacking
3. Underpinning Skills	3.1 Documenting configuration, incidents and measures taken. 3.2 Saving configuration.
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Addressing and accepting feedback 4.7 Tidiness and timeliness 4.8 Respect for rights of peers and seniors in workplace 4.9 Communication with peers and seniors in workplace
5. Resource implications	5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of assessment	6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
Accreditation Requirements	
Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.	

Unit Code and Title	OUNA04L5V1: Establish Network Security Measures
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to establish network security measures. It specifically includes managing password, securing remote access, configuring security protocols, managing backup and recovery
Nominal Hours	60 hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables.
1. Manage password	1.1 Password management plan is prepared. 1.2 Strong password is set following password policy 1.3 Access privilege is set as per business plan
2. Secure remote access	2.1 Remote access on devices is configured and tested using <u>remote access protocol</u> . 2.2 Remote access privilege is set
3. Configure access control and security protocol	3.1 <u>Access Control List (ACL)</u> is defined. 3.2 Access Control List (ACL) is configured. 3.3 <u>Virtual Private Network (VPN)</u> is configured. 3.4 <u>Wireless Local Area Network (WLAN) security</u> is configured.
4. Manage backup & recovery	4.1 Backup and recovery techniques in network security are interpreted and applied. 4.2 Backup configuration file is preserved
Range of Variables	
Variables	Range (may include but not limited to)
1. Remote access protocol	1.1 Secured Shell (SSH) 1.2 Hyper Text Transfer Protocol Secure (HTTPS)
2. Access Control List (ACL)	2.1. Standard 2.2. Extended 2.3. Dynamic 2.4. Reflexive 2.5. Time-based 2.6. Named/ Numbered
3. Virtual Private Network (VPN)	3.1 SSL VPN 3.2 Site-to-site VPN 3.3 Generic Routing Encapsulation (GRE) 3.4 Internet Protocol Security (IPSEC) 3.5 GRE over IPSEC
4. Wireless Local Area Network (WLAN) security	4.1 Enterprise WLAN 4.2 WEP 4.3 WPA-PSK 4.4 WPA2 4.5 Authentication Authorization and Accounting (AAA)

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 managed password 1.2 secured remote access 1.3 configured access control and security protocols 1.4 managed backup & recovery
2. Underpinning Knowledge	2.1 Password 2.2 Remote access 2.3 ACL 2.4 VPN 2.5 GRE 2.6 IPSEC 2.7 Layer 2 security 2.8 WAN Authentication 2.9 Storage media 2.10 NEXT GENERATION Firewall
3. Underpinning Skills	3.1 Setting passwords 3.2 Testing routers and switches. 3.3 Checking performance
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Addressing and accepting feedback 4.7 Tidiness and timeliness 4.8 Respect for rights of peers and seniors in workplace 4.9 Communication with peers and seniors in workplace
5. Resource implications	5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of assessment	6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
Accreditation Requirements	
Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under NSQF. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.	

Unit Code and Title	OUNA05L5V1: Deploy Next Generation Firewall
Unit Descriptor	This unit covers the knowledge, skills, and attitudes required to deploy next generation firewall. It specifically includes configuring next generation firewall, configuring security level, performing security inspection, configuring security profile, configuring object and NAT, performing firewall clustering and preparing log report
Nominal Hours	60 hours
Elements of Competency	Performance Criteria <u>Bold and Underlined</u> terms are elaborated in the Range of Variables.
1. Configure next generation firewall	1.1 Next generation firewall is interpreted. 1.2 Firmware is updated and license is installed as per requirement 1.3 Core features of next generation firewall is recognized. 1.4 Firewall is configured following standard procedure. 1.5 Performance of next generation firewall is checked as per standard procedure. 1.6 Network Time Protocol (NTP) is set. 1.7 <u>Firewall mode</u> is configured as required
2. Configure security level	2.1 <u>Security level</u> is interpreted 2.2 Security level is configured
3. Perform security inspection	3.1. Intrusion Prevention System (IPS) Technology is inspected 3.2. Intrusion Detection System (IDS) Technology is inspected
4. Configure security profile	4.1 Content filtering is performed 4.2 URL filtering is performed 4.3 Advanced Malware Protection (AMP) is inspected 4.4 Quality of Services (QoS) is ensured
5. Configure object and NAT	5.1 Network/ host object is configured 5.2 DMZ to outside and DMZ to inside NAT are configured 5.3 Inside to outside and outside to inside NAT are configured
6. Perform firewall clustering	6.1 Firewall clustering is interpreted 6.2 High availability of firewall is ensured
7. Prepare log report	7.1 Log files are collected and analyzed 7.2 Report is generated as per requirement 7.3 Report is submitted to the authority
Range of Variables	
Variables	Range (may include but not limited to)
1. Firewall mode	1.1 Perimeter/ NAT mode 1.2 Transparent mode
2. Security level	2.1 Inside zone

	2.2 Outside zone 2.3 Demilitarized zone (DMZ)
Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent, and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 configured next generation firewall 1.2 configured security level 1.3 performed security inspection 1.4 configured security profile 1.5 configure object and NAT 1.6 perform firewall clustering
2. Underpinning Knowledge	2.1 Routing 2.2 Switching 2.3 Basic Security concepts
3. Underpinning Skills	3.1 Performing routing 3.2 Performing switching
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Promptness in carrying out activities 4.3 Sincere and honest to duties 4.4 Environmental concerns 4.5 Eagerness to learn 4.6 Addressing and accepting feedback 4.7 Tidiness and timeliness 4.8 Respect for rights of peers and seniors in workplace 4.9 Communication with peers and seniors in workplace
5. Resource implications	5.1 Relevant tools, Equipment, software and facilities needed to perform the activities. 5.2 Required learning materials.
6. Methods of assessment	6.1 Written test 6.2 Demonstration 6.3 Oral questioning
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited center. 7.2 Assessment should be done by NSDA certified/ nominated assessor
Accreditation Requirements	
Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.	

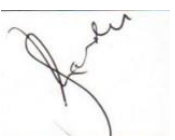

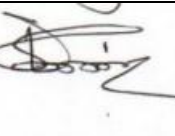
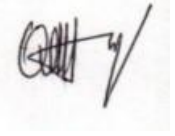
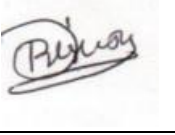
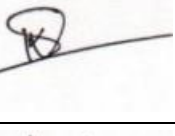
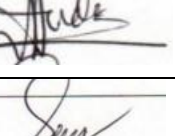
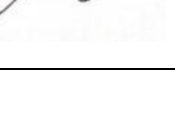
Development of Competency Standard

The Competency Standards for National Skills Certificate in Network Administration is developed by SEIP on 18 September 2021.

S/N	Name and Address	Position in the committee
01	Mr. Mohammed Nasir, Chairman, RTISC	Chairperson
02	Mr. Dr. Md. Sanwar Jahan, SEIP, DEPD (Privet-1)	Member
03	Mr. Quazi Mahmudul Huq, PeopleNTech, Head of Faculty (Network & Server)	Member
04	Mr. Arman Kawsar Rakib, Executive (IT), Pryota Software Ltd.	Member
05	Mr. Nixon Dutta, Sr. Officer, Meghna Bank Ltd.	Member
06	Mr. Md. Moniruzzaman Sohel, Officer, IT, One Bank Ltd.	Member
07	Mr. Yasin Alam, Executive (IT), Aizoom Ltd.	Member
08	Mst. Khaleda Mousumee, Coordinator – Training, Monitoring & Assessment, BASIS-SEIP -3 Project	Member
09	Mr. Syed Azharul Haque, CEO, Skills Zone, Dhaka.	Member
10	Mr. Md. Abu Saleh, Technical Head, UCEP, Dhaka	Member
11	Wg Cdr Zaglul Hayder (Rtd), CEO, RTISC.	Member
12	Mr. Md. Sharif Nowaz, Executive (Curriculum development & Training), RTISC.	Member
13	Mr. Md. Moniruzzaman, Executive (Assessment & Certification), RTISC.	Member

Validation of Competency Standard

The Competency Standards for National Skills Certificate in Network Administration, Level-5 is validated by NSDA on 12 June 2022.

S/N	Name and Address	Position in the committee	Signature and Date
01	Shafquat Haider, Chairman, ICT ISC, Email: ciproco@bol-online.com, shafquat.haider@gmail.com, Mobile: 01711532597	Chairperson	
02	Engr. Md. Yusuf Islam Network & Security Specialist Pakiza Technovation Limited Email: yusufbd156@gmail.com Mobile: +8801914996156	Member	
03	Md. Sohel Ahammed, Maintenance Engineer IT, BIMAN Bangladesh Airlines. Email: md.sohel@bdbiman.com, Mobile: 01737346686	Member	
04	Quazi Mahmudul Huq Head of Faculty, Network & Server, PeopleNTech, Email: quazimahmudulhuq@gmail.com Mobile: 01711282944,	Member	
05	Debrata Biswas, Senior Network Engineer, Telnet Communication Limited, Email: deb4592@gmail.com Mobile: 01713556162	Member	
06	Khokon Roy, Sr Support Engineer, Link3 Technologies Ltd, Email: info2khokon@gmail.com Mobile: 01784006777	Member	
07	Mahbub Huda, Consultant, Specialist, NSDA, Email: huda73@gmail.com, Mobile: 01735490491.	Member	
08	Md. Saif Uddin, Process Expert, National Skills Development Authority Email: engrbd.saif@gmail.com, Mobile: 01723004419.	Member	

Workshop Minutes

Government of the People's Republic of Bangladesh
 Prime Minister's Office
 National Skills Development Authority
 Level: 10-11, Biniyog Bhaban,
 E-6 / B, Agargaon, Sher-E-Bangla Nagar Dhaka-1207, Bangladesh.
 Email: ec@nsda.gov.bd
 Website: www.nstda.gov.bd.

Minutes of the Competency Standard Validation Workshop on “Network Administration Using Cisco” Occupation.

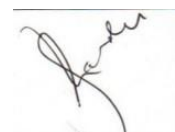
Chairman	: Mr. Shafquat Haider, Chairman, ICT ISC
Date	: 14 June 2022
Time	: 9:00am - 5:00pm
Place	: ISC Conference Room, NSDA, Biniyog Bhaban, Agargaon, Dhaka-1207

The Chairman welcomed all those present and started the work of the workshop. During the day-long workshop, the competency standard of Network Administration Using Cisco Occupation was reviewed and finalized in detail. The activities related to the finalized standard through validation workshop are presented below:

Serial No.	Content of validation	Whether it was appropriate		What actions have been taken if not appropriate?
		Yes	No.	
1	Name and level of occupation		No.	The name of the occupation has been changed from "Network Administration Using Cisco" to "Network Administration".
2	Nominal Hour	Yes		360 hours
3	Unit of Competency		No.	<p>From the proposed Generic Units</p> <ul style="list-style-type: none"> ▪ “Work in a Team Environment”, and “Demonstrate Interpersonal and Communication Skills” are excluded. ▪ Following Two units are added to Generic Competencies: ▪ “Lead Small Team”, and “Develop Entrepreneurship Skills” <p>Following unit from Sector Specific Units is excluded:</p> <ul style="list-style-type: none"> ▪ Access Information Using Internet and Electronic Mail <p>At Occupation Units following changes are made:</p> <ul style="list-style-type: none"> ▪ Proposed first unit “Demonstrate Knowledge on Network Fundamentals” is excluded

				<ul style="list-style-type: none"> ▪ A new unit “Deploy Next Generation Firewall” is included
4	Element		No.	Proper refinement of required elements has been achieved by keeping consistent elements.
5	Performance Criteria		No.	Necessary refinement of performance criteria has been achieved.
3	Variables		No.	Appropriate addition, modification and refinement of variables has been done keeping in view the performance criteria.
3	Critical Aspect of Competence		No.	Appropriate changes have been made in the critical aspect of competency as per the change of units.
3	Underpinning knowledge		No.	Necessary addition, changes and refinements have been made.
9	Underpinning Skills		No.	Necessary added, changes and refinements have been made.
10	Attitude	Yes		
11	Resources	Yes		
12	Assessment methods	Yes		
13	Others			<ul style="list-style-type: none"> ▪ The nominal hours of the units of competencies have been readjusted for content consideration. ▪ Overall, the occupation has been included in Level-5 according to NSQF (BNQF 1-6).

Through the above activities, the Competency Standard has been finalized and validated as “**Network Administration, Level-5**”.



Chairman
Committee on Standard and
Curriculum Validation,
Chairman - ICT ISC