

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

SECTION A: QUALIFICATION DETAILS														
QUALIFICATION DEVELOPER (S)					Department of Teacher Training and Technical Education									
TITLE		Diploma in Computer Networking								NCQF LEVEL		6		
FIELD		Information and Communication Technology			SUB-FIELD		Computer Networking			CREDIT VALUE		364		
New Qualification					<input checked="" type="checkbox"/>		Review of Existing Qualification							
SUB-FRAMEWORK		General Education			<input type="checkbox"/>		TVET			<input checked="" type="checkbox"/>		Higher Education		
QUALIFICATION TYPE		Certificate	I	II	III	I	V	Diploma	<input checked="" type="checkbox"/>	Bachelor or				
		Bachelor Honours		Post Graduate Certificate				Post Graduate Diploma						
		Masters				Doctorate/ PhD								
RATIONALE AND PURPOSE OF THE QUALIFICATION <p>This qualification has been developed in line with Botswana Government's Vision 2036 which acknowledges Information and Communication Technology (ICT) as one of the key contributors to economic growth and employment creation (page 17). The Vision further emphasizes the implementation of a curriculum which is aligned to the needs of the economy and business, science, mathematics and technology (page 20).</p> <p>In the National Development Plan 11 dated April 2017-March 2023 it's highlighted that "The training of ICT personnel will continue to be accorded priority in order to enhance the sector's contribution to economic and export diversification, as well as the creation of high quality jobs.</p> <p>In view of the above, the Labour Market Analysis conducted by the Botswana Human Resource Development Council dated December 2016, identified a Computer Network Professional (HRDC Occupation Code No. 2523) as one of the Priority Skills with high demand at a national level within the Field of Information and Communication Technology.</p>														

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

PURPOSE:

The purpose of this qualification is to produce Computer Network professionals with advanced technical knowledge, skills and competencies to perform duties and tasks pertaining to hardware and software engineering, advanced Network systems and technologies, in accordance with established codes of practice and international best practice such as cyber laws, policies and legislative frameworks thereby closing the skills gaps and mismatch identified by the employers in the sector.

The qualification also aims to emphasize professionalism, leadership and strong management discipline, and to lay a foundation for future career advancement in the IT industry. This qualification will enable candidates to reach their full potential, develop their knowledge and skills and enter a competitive and challenging workplace environment with confidence based on the required competencies and knowledge.

Upon Completion of this qualification, the successful candidate will be able to demonstrate the following competencies to meet the needs of the labour market:

- Install, operate and troubleshoot medium enterprise routers and switches.
- Design and implement a security perimeter for ICT networks.
- Configure virtual computing environment.
- Design and implement integrated server solutions.
- Configure, verify and troubleshoot LANs, WANs and IP services.
- Evaluate and install computer hardware, networking software, operating system and software applications.
- Optimise server performance.
- Perform data backups and disaster recovery operations.
- Apply skills learnt in an industry placement site.
- Design and administer a database management system for an enterprise.
- Demonstrate good communication, research and problem-solving competencies.
- Apply safety and health principles in the working environment.
- Apply project management disciplines and concepts in a given project.

ENTRY REQUIREMENTS (including access and inclusion)

Minimum entry requirement for this qualification is Certificate IV, NCQF Level IV

Credit Accumulation and Transfer (CAT) and Recognition of Prior Learning (RPL):

CAT and RPL Provisions shall be applied to allow candidates to start this qualification at a level that is consistent with the knowledge and skills gained from prior learning. This would be applied in relation to CAT and RPL policies in place.

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

SECTION B QUALIFICATION SPECIFICATION	
GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
1. Apply a wide range of current and emerging specialised Networking technologies in the provision of a networked solution for an enterprise	1.1 Configure a router for internet connection, internetwork Communication and for firewall operations 1.2 Configure a Switch for a Local Area Network 1.3 Implement Spanning Tree Protocol and a Virtual Local area Network
2. Design, Configure, implement, monitor and maintain network infrastructure to support organisational operations using current and emerging network technology expertise	2.1 Construct a Local Area Network using different networking media 2.2 Configure appropriate networking protocols and standards 2.3 Configure an intranet for a specific company 2.4 Design and install a wireless Network 2.5 Implement Cloud Computing Services 2.6 Configure Point-to-Point Protocol 2.7 Configure Network Address Translation 2.8 Implement IPv6 Addressing Services 2.9 Install a database management platform 2.10 Develop a logical data model 2.11 Implement a physical database 2.12 Manipulate data in the database 2.13 Tune and optimise access to data in the database 2.14 Implement a security system on a given network infrastructure 2.15 Implement a database security plan
3. Implement secure solutions for access and use of devices, servers, networks and data storage through the application of updated expertise and emerging IT security techniques	3.1 Plan and Install Network Server Components 3.2 Maintain a network server environment 3.3 Plan for Business Continuity in the event of a disaster 3.4 Install, configure and upgrade Personal Computer and Server Hardware and Software 3.5 Troubleshoot and resolve PC and server hardware Problems 3.6 Carryout procedures to recover system failures 3.7 Troubleshoot Printers 3.8 Provide User Support

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

	<p>3.9 <i>Manage activities in different OS platforms</i></p> <p>3.10 <i>Implement and manage access to resources, hardware devices and drivers</i></p> <p>3.11 <i>Implement network services</i></p> <p>3.12 <i>Optimise and Monitor Systems</i></p> <p>3.13 <i>Manage desktop environments</i></p> <p>3.14 <i>Implement and manage access to Web and FTP Services</i></p> <p>3.15 <i>Implement and manage a disk storage system</i></p>
<p>4. <i>Demonstrate knowledge and skills applicable to professionally and safely carryout ICT related projects and tasks assigned in a relevant work/business place environment within specified parameters.</i></p>	<p>4.1 <i>Plan for a Work placement in any specialised IT environment</i></p> <p>4.2 <i>Negotiate for a Work placement</i></p> <p>4.3 <i>Undertake a Work placement</i></p> <p>4.4 <i>Evaluate a Work placement</i></p> <p>4.5 <i>Carryout an integrated project applying project life cycle concepts</i></p> <p>4.6 <i>Investigate health and safety requirements in an IT related environment</i></p> <p>4.7 <i>Apply safe use of IT related tools and equipment</i></p> <p>4.8 <i>Maintain safe and secure environment in the work place</i></p>
<p>5. <i>Apply effective interpersonal, collaborative and communication skills professionally and ethically when working with clients and colleagues in an IT environment</i></p>	<p>5.1 <i>Evaluate concepts of work ethics and Professionalism</i></p> <p>5.2 <i>Analyse ethical issues arising in the workplace</i></p> <p>5.3 <i>Evaluate the influence of believe system on the workforce</i></p> <p><i>Supervisory Skills</i></p> <p>5.4 <i>Apply organisational skills in the work place</i></p> <p>5.5 <i>Prepare supervisory plans</i></p> <p>5.6 <i>Demonstrate ethical leadership in the work Place</i></p> <p><i>Communication and Research Skills</i></p> <p>5.7 <i>Demonstrate mastery of the interview process</i></p> <p>5.8 <i>Conduct formal meetings</i></p> <p>5.9 <i>Produce investigative reports</i></p> <p>5.10 <i>Present a research proposal</i></p> <p>5.11 <i>Review secondary data relating to research objectives</i></p> <p>5.12 <i>Design data collection tools for primary data collection</i></p> <p>5.13 <i>Compile a research proposal</i></p>
<p>6. <i>Demonstrate competencies in applying essential business strategies, principles and techniques to start a small to</i></p>	<p>6.1 <i>Prepare a Business plan</i></p> <p>6.2 <i>Sell goods and services</i></p> <p>6.3 <i>Evaluate the business operation</i></p>

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

<i>medium or micro enterprises and to ensure its effective functioning</i>	
--	--

(Note: Please use Arial 11 font for completing the template)

SECTION C	QUALIFICATION STRUCTURE				
FUNDAMENTAL COMPONENT <i>Subjects/ Courses/ Modules/Units</i>	TITLE	Credits Per Relevant NCQF Level			Total (Per Subject/ Course/ Module/ Units)
		Level [5]	Level [6]	Level [7]	
	Communication Skills	8			8.0
	Entrepreneurship	8			8.0
	Supervisory Skills		6		6.0
	Work Ethics and Professionalism		8		8.0
	Research Skills		8		8.0
	Occupational Health and Safety	6			6.0
	Numeracy		8		8.0
TOTAL					52
CORE COMPONENT	Workstation Operating System	15			15.0
	Server Implementation		15		15.0

 BOTSWANA Qualifications Authority	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

Subjects/Courses/ Modules/Units	PC Hardware and Software	15			15.0
	Network Server Operating System	15			15.0
	Local Area Network Technology	15			15.0
	Routing Technology		18		18.0
	Switching Technology		18		18.0
	Network and Data Cabling		18		18.0
	Wide Area Network Technology		18		18.0
	Wireless Networking	15			15.0
	Project Management		15		15.0
	Network Security		15		15.0
	Integrated Project		30		30.0
	Work Placement		60		60.0
TOTAL					282
ELECTIVE/ OPTIONAL COMPONENT <i>Subjects/Courses/ Modules/Units</i>					
	Web Technologies	5			15.0
	Database Administration	5			15.0
	Linux Operating System		6		15.0
	Cloud Computing		6		15.0
TOTAL					60.0

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL

TOTAL CREDITS PER NCQF LEVEL

NCQF Level	Credit Value
Level 5	127
Level 6	267
TOTAL CREDITS	394

Rules of Combination:

(Please Indicate combinations for the different constituent components of the qualification)

The rules of combination for this qualification are defined below, and cover the minimum and maximum credit values required to be accumulated, along with details of any mandatory units.

COMPONENT	LEVEL 5	LEVEL 6
Core	75 credits	207 credits
Fundamental	22 credits	30 credits
Elective	30 credits	30 credits

- The Fundamental Component consists of Unit Standards to the value of **52 credits** all of which are compulsory.
- The Core Component consists of Unit Standards to the value of **282 credits** all of which are compulsory.
- Elective Component consists of Unit Standards to the value of **60 credits** of which a candidate is to complete **2 units** out of the 4 units available from either level making a total of **30 minimum credits**.
- The Total Minimum number of Credits should be **364 Credits** for the qualification award.

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

ASSESSMENT ARRANGEMENTS

FORMATIVE ASSESSMENT

Formative assessment or continuous assessment contributing towards the award of credits should be based on module (unit) outcomes. This may include:

- Tests
- Assignments
- Research project
- Simulated Practice in computer or network Laboratories
- Real work practice in the IT related industry set up

The contribution of formative assessment to the final grade shall be 60%.

SUMMATIVE ASSESSMENT

Candidates shall undergo assessment. The final assessment for each module (unit) contributes 40% of the final mark for that module.

MODERATION ARRANGEMENTS

BQA accredited subject specialists in relevant fields with relevant industry experience and academic qualifications shall be engaged to conduct internal and external moderation in accordance with applicable policies and regulations.

RECOGNITION OF PRIOR LEARNING

Recognition of Prior Learning (RPL) Policy and Procedures are in place.

Candidates may submit evidence of prior learning and current competence and/or undergo appropriate forms of RPL assessment for the award of the qualification in accordance with applicable RPL policies and relevant national-level policy and legislative framework. Implementation of RPL shall also be consistent with requirements, if any, prescribed for the field or sub-field of study by relevant national, regional or international professional bodies.

CREDIT ACCUMULATION AND TRANSFER

Candidates may submit evidence of credits accumulated in related qualification in order to be credited for the qualification they are applying for.

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

LEARNING PATHWAYS

Horizontal and/or Diagonal Articulation (related qualifications of similar level that graduates may consider)

- NCQF Level 6 - Diploma in Systems Administration
- NCQF Level 6 - Diploma in Web Design
- NCQF Level 6 - Diploma in Software Engineering
- NCQF Level 6 - Diploma in Information Technology

Graduates may consider undertaking professional certifications since vendor training is recognized internationally as an industry benchmark for product specific training.

Vertical Articulation (qualifications to which the holder may progress to)

- NCQF Level 7 - Degree in Network Technology
- NCQF Level 7 - Degree in Software Engineering
- NCQF Level 7 - Degree in Computer Science
- NCQF Level 7 - Degree in Information Technology

EMPLOYMENT PATHWAYS

On successful completion of this qualification the holder may be absorbed in the job market as:

- Computer Network Technician
- Network Supporter
- IT User Support
- Network Analyst
- Entrepreneur in IT and related areas

QUALIFICATION AWARD AND CERTIFICATION

For a Candidate to be awarded Diploma in Computer Networking must acquire **a minimum requirement of 364 credits.**

Certification

A certificate will be awarded to a Candidate upon completion of the qualification in accordance with applicable policies.

	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

REGIONAL AND INTERNATIONAL COMPARABILITY

This qualification has been benchmarked against similar Regional and International Qualifications.

REVIEW PERIOD

The qualification will be reviewed every five **(5) years** or as and when required depending on the changing needs of the market

Other information – please add any supplementary information to help the application for this qualification for NCQF Registration.

This qualification was developed based on an Occupational profile (Attached) developed by industry using the DACUM (Develop a Curriculum) Method. I was also aligned to the International Standard Classification of Occupations of 2008 (ISCO 08 – Unit Group 3513)