

Assessment Evidence Guide

For

“Network and Cloud Configuration Expert”

Level-5

(Summative Assessment)



**National Vocational & Technical
Training Commission**

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Diploma Level 5 in Computer Networking and Cloud Computing (Network and Cloud Configuration Expert)	CS Code:	Level:5	Version:01
Competency Standard Title: Manage Repositories on Cloud Side Configure Tools for Continuous Deployment (DevOps) Manage Web Applications on Cloud Manage Public Cloud Services Set High Performance Computing (HPC) Environment on Public Cloud Set up Environment for Big Data and Block Chain on Cloud Perform Network and Cloud Security Deploy Hardware/Software Protection Configure Virtual Private Networks (VPN) Perform Traffic Filtration on Next Generation Firewall Perform Cyber Security Functions Manage and Supervise the Job Activities Develop Entrepreneurial Skills Practice Professionalism	Assessment Date (DD/MM/YY): Assessment Time: 05 Hrs.		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment): Assessment Task 1: Candidate is required to configure devOps including coding, building, testing, packaging release, configuration and monitoring as per instruction given by assessor.

	<p>Assessment Task 2: Candidate is required to design and manage cloud service to accommodate given scenario for a private cloud, set up an environment, and integrate Lambda function. Add security to the cloud, also review the scenario for possible scaling problems.</p> <p><u>Scenario:</u></p> <ul style="list-style-type: none"> ✓ A web application allows customers to upload orders to an S3 bucket. The resulting Amazon or any cloud storing service events trigger a Lambda function that inserts a message to an SQS queue. A single EC2 instance reads messages from the queue, processes them, and stores them in a Dynamo DB table partitioned by unique order ID. Next month traffic is expected to increase by a factor of 10 as per instructions given by assessor. <p>And complete:</p> <ol style="list-style-type: none"> 1. Knowledge assessment test (Written or Oral) 2. Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Install / Setup local copy of repository on developer's systems</p> <p>Performance Criteria 2: Integrate the local copy with development environment</p> <p>Performance Criteria 3: Create branches and sub branches of code repository</p> <p>Performance Criteria 4: Deploy across different environments</p> <p>Performance Criteria 5: Automate the creation of environment (Dev/QA/Staging) images for facilitating development and testing</p> <p>Performance Criteria 6: Automate the deployment across different environments</p> <p>Performance Criteria 7: Build Automation push a Docker image to the repository.</p> <p>Performance Criteria 8: Release Alpha version to collect feed.</p> <p>Performance Criteria 9: Release Beta version to perform testing</p> <p>Performance Criteria 10: Release Production version after necessary changes</p> <p>Performance Criteria 11: Deploy Manual to production server</p> <p>Performance Criteria 12: Use tools to Automatically deploy to the production</p> <p>Performance Criteria 13: Manage Files through file manager.</p> <p>Performance Criteria 14: Monitor account's available space</p> <p>Performance Criteria 15: Configure FTP Accounts</p> <p>Performance Criteria 16: Create Git repositories</p> <p>Performance Criteria 17: Create Database on assigned cloud account</p> <p>Performance Criteria 18: Add user to Database</p> <p>Performance Criteria 19: Create Addon Domain</p> <p>Performance Criteria 20: Configure your website available from another domain name</p> <p>Performance Criteria 21: Manage redirects</p> <p>Performance Criteria 22: Configure Zone Editor</p>

	<p>Performance Criteria 23: Configure SSH (Secure Shell) Access</p> <p>Performance Criteria 24: Manage IP Blocker</p> <p>Performance Criteria 25: Configure SSL (Secure Sockets Layer) / TLS (Transport Layer Security)</p> <p>Performance Criteria 26: Configure Installation of CMS</p> <p>Performance Criteria 27: Configure Database for CMS</p> <p>Assessment Task 2</p> <p>Performance Criteria 1: Create and login cloud account</p> <p>Performance Criteria 2: Select Operating System for server</p> <p>Performance Criteria 3: Create the Virtual machine</p> <p>Performance Criteria 4: Configure accessibility using FTP/SSH</p> <p>Performance Criteria 5: Select resources to create virtual network</p> <p>Performance Criteria 6: Connect hosts with virtual network</p> <p>Performance Criteria 7: Launch cloud tool for required application</p> <p>Performance Criteria 8: Assign resources to host</p> <p>Performance Criteria 9: Create virtual machine image</p> <p>Performance Criteria 10: Create job schedule for backups</p> <p>Performance Criteria 11: Configure backup repository</p> <p>Performance Criteria 12: Restore virtual machine backups</p> <p>Performance Criteria 13: Select requirement and specification for deployment of resources</p> <p>Performance Criteria 14: Create the resources for required tasks</p> <p>Performance Criteria 15: Select tool for creating HPC instance.</p> <p>Performance Criteria 16: Perform operation of HPC application</p> <p>Performance Criteria 17: Select tool for creating Big Data and Block Chain instance</p> <p>Performance Criteria 18: Perform the operation of Bigdata and Blockchain application</p> <p>Performance Criteria 19: Install Open SSL library on server and client side.</p> <p>Performance Criteria 20: Create TCP socket and apply SSL on server application</p> <p>Performance Criteria 21: Create TCP socket and apply SSL on client application</p> <p>Performance Criteria 22: Generate SSL certificates for client.</p> <p>Performance Criteria 23: Install these certificates on server</p> <p>Performance Criteria 24: Establish SSL based client server communication</p> <p>Performance Criteria 25: Protect the data using cloud service</p> <p>Performance Criteria 26: Encrypt the data using available tools in the cloud.</p> <p>Performance Criteria 27: Generate reporting/analysis as per instruction</p>
	<p>Portfolios required at the time of assessment (if any) for</p> <ol style="list-style-type: none"> 1. Folder includes a printed document on network security with VPN and firewall configuration. <p>Performance Criteria 1: Apply MAC address filtering</p> <p>Performance Criteria 2: Secure communication from device to gateway by encryption protocols</p> <p>Performance Criteria 3: Add new incoming connection</p> <p>Performance Criteria 4: Set IP address for VPN client and connect</p> <p>Performance Criteria 5: Login to the device through SSH</p> <p>Performance Criteria 6: Install firewall on operating system</p> <p>Performance Criteria 7: Delete, disable, or rename any default user accounts, and change all default passwords</p>

	<p>Performance Criteria 8: Create additional accounts with limited privileges based on responsibilities</p> <p>Performance Criteria 9: Set up firewall zones and IP addresses</p> <p>Performance Criteria 10: Configure access control lists (i.e set inbound and outbound rules)</p> <p>Performance Criteria 11: Generate report from firewall logs</p> <p>Performance Criteria 12: Set a host name for the firewall</p> <p>Performance Criteria 13: Configure IP addresses for interfaces.</p> <p>Performance Criteria 14: Add the interfaces to security zones.</p> <p>Performance Criteria 15: Configure firewall security policies on the CLI.</p> <p>Performance Criteria 16: Configure a NAT Policy A</p> <p>Performance Criteria 17: Create user groups</p> <p>Performance Criteria 18: Create user policies B</p> <p>Performance Criteria 19: Install sniffing tool</p> <p>Performance Criteria 20: Perform Sniffing with better cap</p>
--	---

Assessors Judgment Guide

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓	✓			
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist				
Assessment Task 1		Description of Assessment Task 1		
		Configure devOps including coding, building, testing, packaging release, configuration and monitoring.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Install / Setup local copy of repository on developer's systems			
2.	Integrate the local copy with development environment			
3.	Create branches and sub branches of code repository			
4.	Deploy across different environments			
5.	Automate the creation of environment (Dev/QA/Staging) images for facilitating development and testing			
6.	Automate the deployment across different environments			
7.	Build Automation push a Docker image to the repository.			
8.	Release Alpha version to collect feed.			
9.	Release Beta version to perform testing			
10.	Release Production version after necessary changes			
11.	Deploy Manual to production server			
12.	Use tools to Automatically deploy to the production			
13.	Manage Files through file manager.			
14.	Monitor account's available space			
15.	Configure FTP Accounts			
16.	Create Git repositories			
17.	Create Database on assigned cloud account			
18.	Add user to Database			
19.	Create Addon Domain			
20.	Configure your website available from another domain name			
21.	Manage redirects			
22.	Configure Zone Editor			
23.	Configure SSH (Secure Shell) Access			
24.	Manage IP Blocker			

25.	Configure SSL (Secure Sockets Layer) / TLS (Transport Layer Security)			
26.	Configure Installation of CMS			
27.	Configure Database for CMS			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		
Each Assessment Task (with performance criteria)				

Assessment Task 2		Description of Assessment Task 2		
		Design and manage cloud service to accommodate above given scenario for a private cloud, set up an environment, and integrate Lambda function. Add security to the cloud, also review the scenario for possible scaling problems		
		<u>Scenario:</u>		
		A web application allows customers to upload orders to an S3 bucket. The resulting Amazon or any cloud storing service events trigger a Lambda function that inserts a message to an SQS queue. A single EC2 instance reads messages from the queue, processes them, and stores them in a Dynamo DB table partitioned by unique order ID. Next month traffic is expected to increase by a factor of 10.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Create and login cloud account			
2.	Select Operating System for server			
3.	Create the Virtual machine			
4.	Configure accessibility using FTP/SSH			
5.	Select resources to create virtual network			
6.	Connect hosts with virtual network			
7.	Launch cloud tool for required application			
8.	Assign resources to host			
9.	Create virtual machine image			
10.	Create job schedule for backups			
11.	Configure backup repository			
12.	Restore virtual machine backups			
13.	Select requirement and specification for deployment of resources			
14.	Create the resources for required tasks			
15.	Select tool for creating HPC instance.			
16.	Perform operation of HPC application			
17.	Select tool for creating Big Data and Block Chain instance			
18.	Perform the operation of Bigdata and Blockchain application			
19.	Install Open SSL library on server and client side.			

20.	Create TCP socket and apply SSL on server application			
21.	Create TCP socket and apply SSL on client application			
22.	Generate SSL certificates for client.			
23.	Install these certificates on server			
24.	Establish SSL based client server communication			
25.	Protect the data using cloud service			
26.	Encrypt the data using available tools in the cloud.			
27.	Generate reporting/analysis as per instruction			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		
Each Assessment Task (with performance criteria)				

Portfolio		Description of Portfolio		
		Folder includes a printed document on network security with VPN and firewall configuration.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Apply MAC address filtering			
2.	Secure communication from device to gateway by encryption protocols			
3.	Add new incoming connection			
4.	Set IP address for VPN client and connect			
5.	Login to the device through SSH			
6.	Install firewall on operating system			
7.	Delete, disable, or rename any default user accounts, and change all default passwords			
8.	Create additional accounts with limited privileges based on responsibilities			
9.	Set up firewall zones and IP addresses			
10.	Configure access control lists (i.e set inbound and outbound rules)			
11.	Generate report from firewall logs			
12.	Set a host name for the firewall			
13.	Configure IP addresses for interfaces.			
14.	Add the interfaces to security zones.			
15.	Configure firewall security policies on the CLI.			
16.	Configure a NAT Policy A			
17.	Create user groups			
18.	Create user policies B			
19.	Install sniffing tool			
20.	Perform Sniffing with better cap			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		
Each Assessment Task (with performance criteria)				

Knowledge Assessment

Title of Qualification: National Vocational Diploma Level 5 in Computer Networking and Cloud Computing (Network and Cloud Configuration Expert)	CS Code:	Level: 5	Version: 01
Competency Standard Title: Manage Version Control System to Store Repositories on Cloud Side Configure Tools for Continuous Deployment (DevOps) Manage Web Applications on Cloud Manage Public Cloud Services Set High Performance Computing (HPC) Environment on Public Cloud Set up Environment for Big Data and Block Chain on Cloud Perform Network and Cloud Security Deploy Hardware Protection Configure Virtual Private Networks (VPN) Perform Traffic Filtration on Next Generation Firewall Perform Cyber Security Functions	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
------------------------------	--

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> <div style="text-align: right;">NOT YET COMPETENT <input type="checkbox"/></div>

	Name of the Assessor: Assessor's code:
	Signature of the Assessor:

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. What is CodeCommit and source control system	
2. What is meant by Name resolution?	
3. Differentiate between SaaS and IaaS	
4. What are the security aspects provided with cloud?	
5. What is the purpose of cloud service?	
6. What is MAC address filtering used for?	
7. What is a Certificate Signing Request (CSR)?	
8. What is VPN?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
9. At Which Layer does SSL VPN Operate?	
10. What Is Authentication Token?	

ANSWER KEY

Sr.	Answers
1.	AWS Code Commit is a secure, highly scalable, managed source control service that hosts private Git repositories.
2.	Converting a name into the address required by a machine or network.
3.	IaaS: cloud-based services, pay-as-you-go for services such as storage, networking, and virtualization. SaaS: software that's available via a third-party over the internet.
4.	Access control: permissions have to be <i>provided</i> to the users so that they can control the access of other users who are entering the in the <i>cloud</i> environment.
5.	Cloud can offer you the possibility of storing your files and accessing, storing, and retrieving them from any web-enabled interface. The web services interfaces are usually simple. At any time and place, you have high availability, speed, scalability, and security for your environment
6.	MAC address filtering allows you to block traffic coming from certain known machines or devices.
7.	A certificate signing request (CSR) is one of the first steps towards getting your own SSL/TLS certificate. Generated on the same server you
8.	A virtual private network extends a private network across a public network and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network
9.	SL VPNs operate at the transport layer.
10.	An authentication token allows internet users to access applications, services, websites, and application programming interfaces (APIs) without having to enter their login credentials each time they visit.