

PERFORM SYSTEM VIRTUALIZATION

ISCED UNIT CODE: 0612 551 15A

TVET CDACC UNIT CODE: IT/OS/NSA/CC/03/6/MA

UNIT DESCRIPTION:

This unit covers the competencies required to perform system virtualization. It involves the following: Setup Software Based Virtualization, Setup virtual Machines, Allocate Virtual resources, Install Virtual machine Operating systems and Manage Storage

Elements	Performance Criteria
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1. Setup Software Based Virtualization	1.1. Hypervisor or <i>virtual system</i> machine monitor (VMM) is identified as per organizations needs 1.2. <i>Containerization</i> is identified as per work procedure. 1.3. Virtual Machine is setup as per work procedure.
2. Setup virtual Machines	2.1. Virtual machines are identified for individual configurations as per work procedure. 2.2. Resource allocation is set up as per work procedure. 2.3. Dockers are set up as per work procedure
3. Allocate Virtual resources	3.1. <i>Virtual machine resources</i> are identified as per organizations needs 3.2. Docker Images are defined containing the necessary applications. 3.3. <i>Docker commands</i> or container orchestration tools are identified as per virtual machine requirements.

4. Install Virtual machine Operating systems	4.1 Virtual machine operating systems is installed and configured as per work procedure 4.2 Virtual machine parameters are specified as per work procedure 4.3 Virtual networking is configured as per work procedure
5. Manage Virtual Storage	5.1 Virtual storage is assigned for each virtual container as per work procedure 5.2 Virtual disks or shared storage volumes are created as per work procedure 5.3 Cloud storage is configured for remote storage and access as per work procedure.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Virtual system may include but not limited to:	• Virtualbox • VMware • Proxmox • Openvx
2. Containerization may include but not limited to;	• Kubernetes • Docker • Docker swarm • Apache mesos
3. Virtual machine resources may include but not limited to;	• RAM • Storage space
4. Docker commands may include but not limited to;	• Docker build • Docker pull • Docker rm • Docker commit

REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency:

Required knowledge

- Network architecture
- Network components and devices
- Network types
- Network security measures
- Network monitoring procedures
- Network protocols
- Network testing procedures
- Understanding operating system
- Safety awareness
- Environmental conservation
- Workplace safety and health
- Basics electronics

Required skills

- Computer Literacy
- Critical thinking
- Communication skills
- Computational mathematics skills
- Problem-solving skills
- Analytical skills
- Creativity and innovation
- Network testing techniques
- Network security configuration
- Network configuration techniques
- Network Monitoring
- Technical proficiency
- Scripting and automation
- Project management
- Cloud services management
- Storage solutions
- Operating systems proficiency
- Server Administration
- Virtualization
- Basic programming

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Set Up Software Based Virtualization as per work procedure per work procedure 1.2 Setup virtual Machines as per work procedure 1.3 Allocate Virtual resources per work procedure 1.4 Install Virtual machine Operating systems per work procedure 1.5 Managed Storage per work procedure
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks; including computers, media, routers, switches, ports etc
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Portfolio of evidence 3.4 Interviews 3.5 Third party report 3.6 Practical assessment 3.7 Written tests
4. Context of assessment	This Competency may be assessed: 4.1 in a workplace 4.2 In a simulated workplace
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.