

## PERFORM COMPUTER NETWORK MAINTENANCE

ISCED UNIT CODE: 0612 551 07A

TVET CDACC UNIT CODE: IT/OS/NSA/CC/05/5/MA

### UNIT DESCRIPTION:

This unit covers the competencies required to Perform Computer Network maintenance. It involves the following: Analyze Computer Network Performance, Troubleshoot Computer Network Components and Perform Computer Network Component Repair.

| <b>Elements</b><br><i>These describe the key outcomes which make up workplace functions</i> | <b>Performance Criteria</b><br><i>These are assessable statements which specify the required level of performance for each of the elements</i><br><b><i>(Bold and italicized terms are elaborated in the range)</i></b>                                                                                                                                            |
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| 1. Analyze Computer Network Performance                                                     | 1.1 Network <b><i>Traffic analysis</i></b> is performed as per work procedure.<br>1.2 Network <b><i>Bandwidth utilization</i></b> is monitored as per work procedure.<br>1.3 Computer network <b><i>Latency measurement</i></b> is conducted as per work procedure.<br>1.4 Network <b><i>Device performance monitoring</i></b> is performed as per work procedure. |
| 2 Troubleshoot Computer Network Components                                                  | 2.1 <b><i>Basic electronic skills</i></b> are applied as per industry standards<br>2.2 Network components and connections are tested as per industry standards<br>2.3 Network configuration is verified as per work procedure<br>2.4 Logs and error messages are reviewed as per work procedure<br>2.5 Report is generated as per the work procedure               |
| 3 Perform Computer Network Component Repair                                                 | 3.1 Faulty network component is Isolated as per work procedures<br>3.2 Problem-solving procedure is established as per work procedures<br>3.3 Maintenance tools are selected<br>3.4 Faults Identified are solved as per work procedure.<br>3.5 Network component repair procedure is documented as per work procedure.                                             |

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| 4. Maintain computer network | 4.1 Hardware maintenance and regular software updates are performed<br>4.2 Network monitoring and Performance optimization is implemented as per work procedure<br>4.3 Backup and disaster recovery is performed as per work requirement<br>4.4 Documentation and inventory are maintained<br>4.5 Compliance and regulatory updates are conducted as per work procedure |
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## 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.

|                                                                  |                                                                                                                                                                                                                   |
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| 1. Traffic analysis may include but not limited to;              | <ul style="list-style-type: none"> <li>● Bandwidth monitoring</li> <li>● Packet inspection</li> <li>● Performance optimization</li> <li>● Forensic analysis</li> <li>● Real-time monitoring and alerts</li> </ul> |
| 2. Bandwidth utilization may include but not limited to;         | <ul style="list-style-type: none"> <li>● Web browsing</li> <li>● File downloads</li> </ul>                                                                                                                        |
| 3. Latency measurement may include but not limited to;           | <ul style="list-style-type: none"> <li>● Ping</li> <li>● Traceroute</li> <li>● Wireshark</li> <li>● Network monitoring tools</li> </ul>                                                                           |
| 4. Device performance monitoring may include but not limited to; | <ul style="list-style-type: none"> <li>● Metrics tracking</li> <li>● Alerting</li> <li>● Real-time monitoring</li> <li>● Security monitoring</li> </ul>                                                           |
| 5. Basic electronic Skills may include but not limited to;       | <ul style="list-style-type: none"> <li>● Cable termination and crimping</li> <li>● Signal transmission</li> <li>● Power Over Ethernet (POE)</li> <li>● Basic implementation of Networking protocols</li> </ul>    |

## REQUIRED KNOWLEDGE AND SKILLS

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

### Required knowledge

- Network security measures

- Network testing procedures
- Safety awareness
- Environmental conservation
- Workplace safety and health
- Basics electronics

### **Required skills**

- Critical thinking
- Communication skills
- Problem-solving skills
- Creativity and innovation
- Network security configuration
- Network configuration techniques
- Network Monitoring
- Technical proficiency
- Scripting and automation
- Operating systems proficiency
- Server Administration
- 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 | <p>Assessment requires evidence that the candidate:</p> <p>1.1 Troubleshoot computer network components as per work procedure</p> <p>1.2 Performed network component repair as per work procedure</p> <p>1.3 Maintained a computer network as per work procedure</p>                                          |
| 2. Resource implications          | <p>The following resources should be provided:</p> <p>2.1 Appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant work environment</p> <p>2.3 Resources relevant to the proposed activities or tasks; including computers, media, routers, switches, ports etc.</p> |
| 3. Methods of assessment          | <p>Competency in this unit may be assessed through:</p> <p>3.1 Observation</p>                                                                                                                                                                                                                                |

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|                                        | 3.2 Oral questioning<br>3.3 Portfolio of evidence<br>3.4 Interviews<br>3.5 Third party report<br>3.6 Practical assessment<br>3.7 Written tests |
| 4. Context of assessment               | 4.1 This Competency may be assessed in a workplace or a simulated workplace.                                                                   |
| 5. Guidance information for assessment | 5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.                               |