## COMPUTER NETWORK SOFTWARE INSTALLATION

**ISCED UNIT CODE:** 0612 451 05A

**TVET CDACC UNIT CODE:** IT/CU/NSA/CR/04/5/MA

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Install Computer Network Software

**Unit Duration:** 200 Hours

**Unit Description**

This unit covers the competencies required to install computer network software. It involves performing computer software installation, testing computer network software and conducting computer network software user training.

**Summary of Learning Outcomes**

| LEARNING OUTCOMES | DURATION (HOURS) |
|---|---|
| 1. Conduct Network Software Simulation | 30 |
| 2. Perform Computer Network Software Installation | 30 |
| 3. Test Computer Network Software | 30 |
| 4. Conduct Computer Network Software User Training | 50 |
| 5. Monitor Computer Network Software Performance | 60 |
| **TOTAL** | **200** |



**Learning Outcomes, Content and Suggested Assessment Methods**

| Learning Outcome | Content | Suggested Assessment Methods |
|---|---|---|
| 1. Conduct Network Software Simulation | 1.1 Computer network software requirements<br>1.1.1 Introduction to computer software<br>1.1.2 Computer network software | |

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| . | 1.1.2.1 Network protocols and services<br>1.1.2.2 Operating systems<br>1.1.2.3 Network management software<br>1.1.2.4 Remote desktop software<br>1.1.2.5 Network backup and recovery software<br>1.1.2.6 VoIP software<br>1.2 Introduction to Installation and configuration of Computer network simulation Software<br>1.2.1 Types of Computer network simulation Software<br>1.2.1.1 Cisco(packet tracer)<br>1.2.1.2 Graphical Network Simulator<br>1.2.1.3 Wire shark<br>1.2.2 Uses of network simulators<br>1.2.3 Best practices in Installation and configuration of Computer network simulation Software<br>1.3 Basic Network Simulations activities<br>1.3.1 Simple Network Design<br>1.3.2 Troubleshooting Network Issues<br>1.3.3 Configuring Basic Protocols | |
| 2. Perform Computer Network software installation | 2.1 Network operating system Installation<br>2.1.1 Introduction to computer Network operating system<br>2.1.2 Functions of a NOS<br>2.1.2.1 File Sharing<br>2.1.2.2 Print Sharing<br>2.1.2.3 Resource Management<br>2.1.2.4 Security<br>2.1.2.5 Network Management<br>2.1.3 Features of Using a NOS<br>2.1.3.1 User authentication and | • Practical test<br>• Project<br>• Portfolio of evidence<br>• Oral questioning<br>• Interviews<br>• Third party report<br>• Written tests<br>• Case study |

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| | authorization:<br>2.1.3.2 File and directory services<br>2.1.3.3 Network security<br>2.1.3.4 Backup and recovery<br>2.1.3.5 Remote management<br>2.1.3.6 Monitoring and reporting<br>2.1.4 Benefits of Using a NOS<br>2.1.4.1 Improved network performance<br>2.1.4.2 Enhanced security<br>2.1.4.3 Simplified network management<br>2.1.4.4 Increased collaboration<br>2.1.4.5 Cost savings<br>2.2 Network monitoring and management tools<br>2.2.1 Network management tools<br>2.2.1.1 FortiManager<br>2.2.1.2 OpManager Plus<br>2.2.1.3 Azure Virtual<br>2.2.1.4 WANQuantum Spark Security Management Portal<br>2.2.2 Network monitoring tools<br>2.2.2.1 Paessler PRTG Network Monitor<br>2.2.2.2 Progress WhatsUp Gold<br>2.2.2.3 Nagios XILogicMonitor<br>2.2.2.4 SolarWinds Network<br>2.2.2.5 Performance Monitor<br>2.2.2.6 Wireshark<br>2.2.2.7 Nagios<br>2.2.2.8 Zabbix<br>2.2.2.9 Cisco Prime Infrastructure<br>2.3 Network monitoring tools configuration | |

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| | 2.3.1 Types of network monitoring tools<br>2.3.1.1 Traffic monitoring tools<br>2.3.1.2 Performance monitoring tools<br>2.3.1.3 Security monitoring tools<br>2.3.2 Network monitoring tools configuration strategies | |
| 3. Test Computer Network Software | 3.1 Network Software Testing<br>3.1.1 Meaning and importance of software testing.<br>3.1.2 Types of computer network Software testing performed as per user requirements<br>3.1.2.1 Exploratory testing<br>3.1.2.2 Test case design<br>3.1.2.3 Defect reporting<br>3.1.2.4 Performance testing<br>3.1.2.5 Security testing<br>3.1.2.6 User acceptance testing<br>3.1.2.7 Functionality test<br>3.1.3 Continuous Improvement of Computer Network Software<br>3.1.3.1 Regular Reviews<br>3.1.3.2 Security Awareness<br>3.1.3.3 Training Incident Response Plan<br>3.1.3.4 Proactive Monitoring<br>3.2 Performing Corrective Actions on Computer Network Software<br>3.2.1 Corrective actions<br>3.2.2 Patch Management<br>3.2.3 Configuration Management<br>3.2.4 Security Measures<br>3.2.5 Network Troubleshooting | • Practical test<br>• Project<br>• Portfolio of evidence<br>• Oral questioning<br>• Interviews<br>• Third party report<br>• Written tests<br>• Case study |

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| | 3.2.6 Performance Optimization<br>3.2.7 Backup and Recovery<br>3.2.8 Continuous Improvement of Computer Network Software<br>3.2.8.1 Regular Reviews<br>3.2.8.2 Security Awareness<br>3.2.8.3 Training Incident Response Plan<br>3.2.8.4 Proactive Monitoring<br>3.3 Introduction to Computer software functionality test report<br>3.3.1 Steps in conducting Computer software functionality test<br>3.3.2 Computer software Functional testing types<br>3.3.2.1 Unit testing<br>3.3.2.2 Smoke testing<br>3.3.2.3 User acceptance<br>3.3.2.4 Regression testing<br>3.3.2.5 Localization testing | |
| 4. Conduct Computer Network software user training | 4.1 User skill gap<br>4.1.1 Meaning of skill gap in computer networks<br>4.1.2 Identification of skill gap in computer networks<br>4.2 User training manuals<br>4.2.1 Definition of training manual<br>4.2.2 Types of computer network training manuals<br>4.2.2.1 Cisco network training manual<br>4.2.2.2 Microsoft certified network engineer associates<br>4.2.2.3 Linux network training manual | • Practical test<br>• Project<br>• Portfolio of evidence<br>• Oral questioning<br>• Interviews<br>• Third party report<br>• Written tests<br>• Case study<br>• Written tests<br>• Case study |

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| | 4.3 Network user training<br>4.3.1 Key Concepts Network user training<br>4.3.1.1 Basic network concepts and terminologies<br>4.3.1.2 Connecting to the networks<br>4.3.1.3 Network security best practices<br>4.3.1.4 Resources access and file sharing<br>4.3.1.5 Performance optimization<br>4.4 Training reports<br>4.4.1 Meaning and identification of computer networks training reports.<br>4.4.2 Types of computer networks training reports<br>4.4.2.1 Training evaluation report<br>4.4.2.2 Training completion report | |
| 5. Monitor computer network software performance | 5.1 Real-time network monitoring<br>5.1.1 Types of network software performance real –time monitoring.<br>5.1.1.1 SNMP<br>5.1.1.2 Packet sniffers<br>5.1.1.3 Performance monitoring tools<br>5.1.1.4 Flow-based analytics<br>5.2 Bandwidth and Throughput analysis<br>5.2.1 Definition of Bandwidth and Throughput<br>5.2.2 Factors Affecting Throughput analysis<br>5.2.2.1 Network Congestion<br>5.2.2.2 Network Congestion<br>5.2.2.3 Latency<br>5.2.2.4 Packet Loss | o Practical test<br>o Project<br>o Portfolio of evidence<br>o Oral questioning<br>o Interviews<br>o Third party report<br>o Written tests<br>o Case study<br>o Written tests<br>o Case study |

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| | 5.2.2.5 Protocol Overhead<br>5.2.2.6 Hardware Limitations<br>5.2.3 Tools for measuring and optimizing throughput and bandwidth<br>5.2.4 Network performance monitoring tools<br>5.2.4.1 Speed test applications<br>5.2.4.2 Quality of service<br>5.2.4.3 Traffic analysis<br>5.2.4.4 Bandwidth management and control tools<br>5.2.4.5 Predictive analytics and capacity planning tools<br>5.2.5 Best practices for managing bandwidth and throughput<br>5.3 Network Alerts and notifications<br>5.3.1 Types of Network Alerts and notifications<br>5.3.1.1 Security alerts<br>5.3.1.2 Performance alerts<br>5.3.1.3 Hardware alerts<br>5.3.1.4 Configuration alerts | |

**Suggested Methods of delivery**

- Role playing
- Viewing of related videos
- Group discussions.
- Instructor led facilitation using active learning strategies.
- Projects.
- Demonstrations.
- Site visits.

**Recommended Resources for 25 Trainees**

| S/No. | Category/Item | Description/ Specifications | Quantity | Recommended Ratio (Trainee: Item) |
|---|---|---|---|---|
| **A** | **Learning Materials** | | | |
| 1. | Textbooks | | 13 pcs | 2:1 |
| 2. | Installation manuals | | | |
| 3. | Flip Charts | | | |
| 4. | PowerPoint presentations | For trainer's use | | |
| **B** | **Learning Facilities & infrastructure** | | | |
| 5. | Lecture/theory room | | 1 | 25:1 |
| 6. | Laboratory | | 1 | 25:1 |
| **C** | **Consumable materials** | | | |
| 7. | Printing papers | | 1 ream | 1:20 |
| 8. | Toners/Cartridges | | 2 pcs | 13:1 |
| 9. | Assorted colour of whiteboard markers | | | |
| **D** | **Tools and Equipment** | | | |
| 10. | Computers | | 25 pcs | 1:1 |
| 11. | Projector | | 1 pc | 25:1 |
| 12. | Flash drives | | 25 pairs | 1:1 |
| 13. | External CD/DVD drives | | 13 pcs | 2:1 |