



Accredited

OCR LEVEL 3 CAMBRIDGE TECHNICAL CERTIFICATE/DIPLOMA IN IT

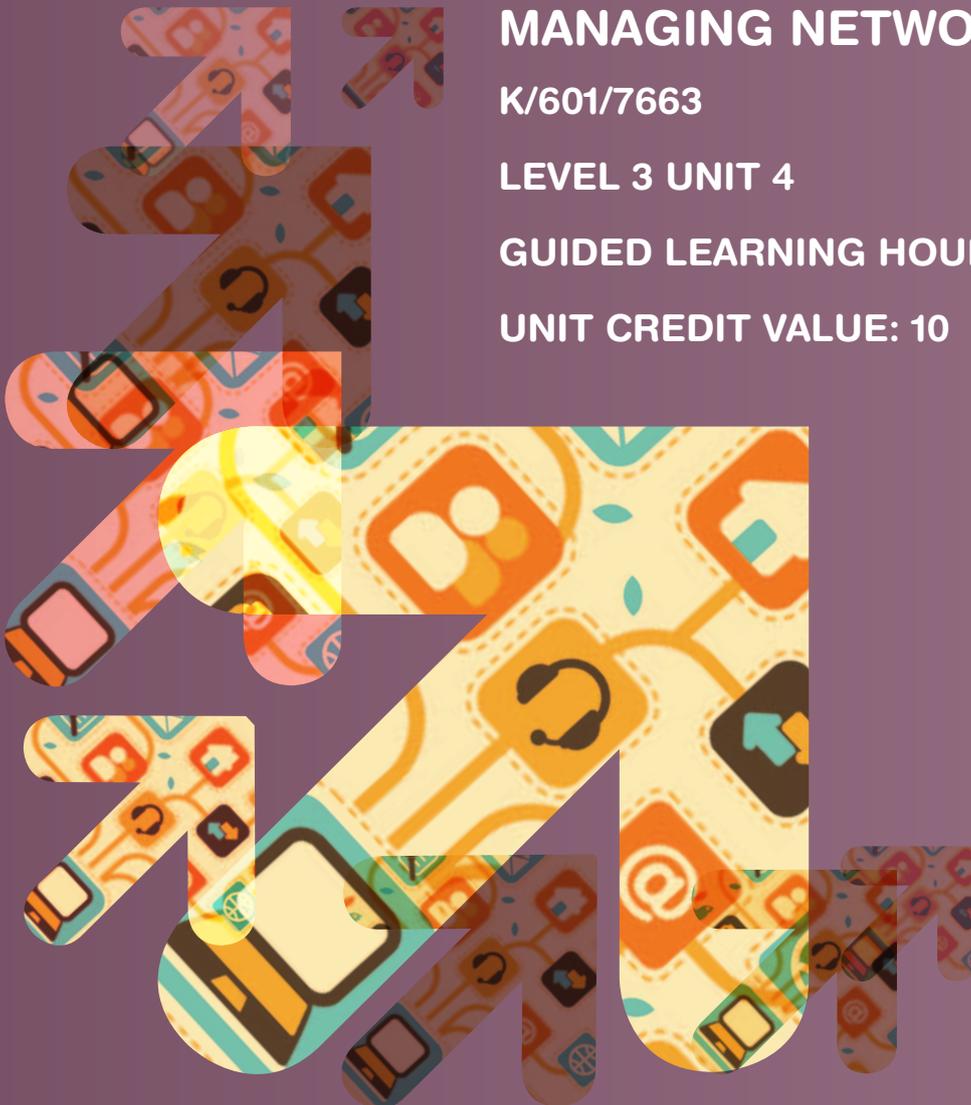
MANAGING NETWORKS

K/601/7663

LEVEL 3 UNIT 4

GUIDED LEARNING HOURS: 60

UNIT CREDIT VALUE: 10



MANAGING NETWORKS

K/601/7663

LEVEL 3 UNIT 4

AIM OF THE UNIT

This unit aims to give learners an understanding of network management functions and the role and responsibilities of the network manager. It will also provide the learners with the opportunity to obtain practical experience in undertaking the position of network manager as it relates to fault diagnosis. Networked computer systems are everywhere nowadays and with the way business is today, essential all day every day. It is therefore very important that business networks run as smoothly, effectively and efficiently as possible with minimum disruption to the businesses, and are flexible to any changes as the business requirements change

With technologies changing daily learners need to research emerging technologies and identify how they could impact on network systems.

Learners will learn how to plan and carry out a variety of network management activities on a network with the main focus being on the maintenance of the system. They will be expected to keep accurate records which help with checking that work has been carried out and for documenting any solutions to potential problems.

Learners will develop the skills and knowledge needed to effectively use the tools and technologies available to network managers. They will gain an understanding about the different functions and types of activities that network managers need to do. They will become familiar with as many of the specialist tools that are available to aid network managers, practically if possible, by demonstration or by research.

Learners will develop an understanding of why organisations need to have a network management policy and the requirements for developing the policy.

ASSESSMENT AND GRADING CRITERIA

Learning Outcome (LO) The learner will:	Pass The assessment criteria are the pass requirements for this unit. The learner can:	Merit To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	Distinction To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Know about networking management tools and technologies	P1 describe network technologies	M1 compare the network technologies used for a small local network, a business network within a single site and a business network across sites	
	P2 outline the purpose of networking tools		
	P3 identify emerging network technologies		
2 Understand network management functions	P4 explain the functions of network management		
3 Be able to carry out network management activities	P5 interrogate a network to identify the network assets and their configuration		D1 analyse the interrogated network performance including any identified problems and faults
	P6 undertake routine network management tasks	M2 complete a work log to manage activities on a network	D2 explain the steps that organisations should take to maintain network security

TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

It is important that the learner:

LO1 Know about networking management tools and technologies

- **network technologies:**
 - operating systems (e.g. Windows Server, Unix, Linux)
 - protocols (e.g. SNMP, ICMP)
 - cabling topologies
 - star
 - bus
 - ring
 - mesh.
 - wireless connectivity
 - devices
 - servers
 - workstations
 - interconnection devices; (e.g. routers, switches, hubs)
 - network cards
 - vendor specific hardware.
- **network management tools:**
 - system software
 - fault management
 - performance management
 - vendor specific.
- **emerging technologies:**
 - server virtualisation
 - video on demand
 - cloud
 - others.

LO2 Understand network management functions

- **network management functions:**
 - considerations (e.g. access, data, performance)
 - installation/upgrade (e.g. planning, designing, installing)
 - configuration
 - performance (e.g. speed, network throughput, user response times, line utilisation)
 - account management
 - fault management
 - reporting and analysis

LO3 Be able to carry out network management activities

- **network interrogation:**
 - fault management,
 - performance management.
- **work logs:**
 - documentation (e.g. logs and reports)
 - activities recorded (e.g. system tests).
- **security:**
 - protection (e.g. VPN access, firewall management, access control, user rights, testing)
 - review (e.g. audits, periodic testing of access and rights, firewall and access control policies).
- **regular maintenance activities:**
 - backup and restore
 - user account settings (e.g. creation, modification, deletion, permissions, access rights)
 - design and develop login scripts
 - virus scans
 - file and system cleanup
 - drive mappings.

DELIVERY GUIDANCE

This unit is a mixture of theory and practical therefore the learners must have experience of handling and using a range of network devices and tools.

To cover some of the learning outcomes and grading criteria the learners will need to practically work with a network. The tutor will need to make sure that they have access to a networked system that is not connected to other networks so the learners will be able to use, configure, and maintain that network without causing concern to the institutional IT staff.

Delivery of the unit could be enhanced with talks by and discussion with visiting network managers.

Learners would benefit from the tutor delivering a theoretical presentation on the subject area with the learners then researching the topic followed by practical exercises where appropriate.

Know about networking management tools and technologies

The learners will need to research and evaluate a range of

- network operating systems
- networking protocols
- network layout:
 - cabling topologies
 - wireless
- network devices
- networking tools
- emerging technologies.

When researching the tools and technologies, learners could be split into small groups and allocated specific topics to research. They could then report back to the larger group on their findings and then a wider discussion with the group on all aspects, strengths and weaknesses would reinforce the learning.

Emerging technologies may also be taught with a mixture of practical exploration, scenarios and detailed investigations by the learners. They should consider the advantages and disadvantages of the developments and may even suggest further ways in which technology may practically develop.

Have a detailed understanding of network management functions

The learners will need to understand network management functions considering and investigating planning, designing, installing, configuration, security, performance variables, account management, fault management, checking and reporting. At this point the learners could be made aware of the network that they will be managing in learning outcome 3 as it would help put the functions into context for them. This is not essential but would be helpful to the learner and make the tasks and exercises more “real”. Learners should research and plan the activities for an identified network, showing their considerations. It would benefit learners to work in small groups to share and explore ideas and different perspectives and then justify their group findings to a wider group. From this exercise learners should be able to develop a comprehensive understanding of the network management functions.

Be able to carry out network management activities

This should be a practical exercise with learners carrying out network management activities. The learners may choose to work in their original groups to apply the security features and security policies they recommended incorporating the knowledge gained from investigations in learning outcome 2. Simulators or multimedia tools can be used to give the learners experience before they actually handle the real thing but should not be the only experience that the learners are given as they will not be able to experience practically the activities. Learners should be made aware of different types and style of work logs as per the teaching content, and the importance of keeping full and accurate records. The learning outcome and associated assessment criteria can not be achieved without the learner carrying out the management of a real network and a range of different activities should be given to the learners to allow them to develop a broader scope of experience.

SUGGESTED ASSESSMENT SCENARIOS AND TASK PLUS GUIDANCE ON ASSESSING THE SUGGESTED TASKS

To achieve a pass grade, learners must achieve all the pass criteria listed in the assessment and grading criteria grid.

Assessment Criteria P1, P2, P3, M1

Learners could create a presentation in which they explain the range of network management tools. They will need to describe the network technologies and the purpose of the network tools looking at emerging technologies.

As this is a level 3 unit, the speaker's notes will need to be very detailed and should be submitted as evidence along with their presentation.

P1 the learners will need to describe the network technologies considering all aspects identified in the teaching content.

P2 the learners will need to give an outline of the purpose of a range networking management tools, screenshots of the tools in use would enhance the presentation.

P3 Here the learners will need to show some evidence they have researched at least two emerging technologies (this could also be recent network technologies) identifying the technology, an overview of how it works and purpose.

For merit criterion M1 the learners will have to review the technologies discussed in P1 and to compare how the technologies might affect the different networks locally and across sites. This should be enhanced with the aid of examples which the learner has identified during their research, their sources should be referenced. This could be presented as a report.

Assessment Criterion P4

Here the learner will need to explain the functions of network management; the learners will include all areas in the teaching content. This could be presented as a report or leaflet.

Assessment Criteria P5, P6, M2, D1, D2

The learners could use the network they have created to show they can manage a network. This is a practical assignment and can be evidenced through observations as well as detailed reports, or witness statement all of which will need to be enhanced with photographs or audio/visual recordings.

P5 Learners will need to use suitable software to interrogate the network, presenting and explaining the results to include network assets and configuration.

P6 Learners will need to demonstrate their ability to undertake routine network management tasks.

For merit criterion M2 learners will need to provide evidence of documenting the management tasks they have completed in P6.

For distinction criterion D1 learners are required to analyse the results of the interrogation in P5 and to explain their findings, including the identification of problems and faults and the actions taken related to them.

For distinction criterion D2 learners should be provided with a scenario in which they are required to design a management security policy. The learner should explain the steps the identified organisation should take to maintain their security including details of user access and rights, security audits, firewall, access control list policies, documentation to be used and policies and procedures. This could be evidenced as a report or presentation.

MAPPING WITHIN THE QUALIFICATION TO THE OTHER UNITS

Unit 3: Computer systems

Unit 7: Computer networks

Unit 8: IT Technical support

Unit 11: Maintaining computer systems

LINKS TO NOS

4.8 IT/Technology infrastructure design and planning

5.4 Systems Integration

7.1 IT/Technology Service Operations and Event Management

7.5 IT Technology Management and Support



CONTACT US

Staff at the OCR Customer Contact Centre are available to take your call between 8am and 5.30pm, Monday to Friday.

We're always delighted to answer questions and give advice.

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