

BTEC Nationals

IVA – LEARNER INSTRUCTIONS

Edexcel Level 3 BTEC National Certificate/Diploma

IT Practitioners (ICT Systems Support)

Unit 21: Networking Project

Unit 24: Network Design and Administration

**IMPORTANT: THIS FOURTH EDITION REPLACES THE
LEARNER INSTRUCTIONS THAT WAS POSTED ON THE
WEBSITE AT THE START OF JULY. PLEASE DESTROY
PREVIOUS VERSION**

Issued July 2004 –Fourth Version

For use during the remainder of the duration of operation
of the specification issued for May 2002



INSTRUCTIONS FOR LEARNERS COMPLETING IVAs

1. The Integrated Vocational Assignment (IVA) is a compulsory part of your qualification. If you do not complete the IVA you may not receive your certificate.
2. Your tutor(s) will tell you how long you have to complete the IVA and the access you may have to resources.
3. Read the IVA carefully and make sure that you understand the work you should hand in and what is required of you. If you are uncertain, discuss it with your tutor(s).
4. The IVA requires you to work by yourself and to produce original work. You should not share your work with any other learners. For example, if you produce an illustration or diagram electronically, you should not give it to another learner. Similarly, you should not accept and use such information from others. You are required to sign that the work submitted is your own.
5. If you work in a group at any stage, you must present your own responses to each task for assessment.
6. Information taken from sources for research, e.g. internet and textbooks, must be identified and not presented as your own work. You should list the sources used.
7. Some tasks may require Observation Records/Witness Statements. Your tutor(s) will organise for these to be completed and you must attach these to your submitted work.
8. In presenting your final work, you should not include draft work or reference materials such as handouts, notes and leaflets, unless the tasks specifically ask you to do so.
9. Presentation of your work:
 - Check that you have completed all tasks.
 - Label work with the appropriate task/sub task number.
 - Present tasks in the correct order.
 - Label each page with your name and page number.
 - Submit all electronic materials in paper format
 - Clearly label video or audio tapes submitted as part of your assignment.
 - All papers should be securely bound.
 - The completed IVA should NOT be presented in plastic envelopes, a box file or a lever arch file.

YOUR ASSIGNMENT TASKS

Part A: Unit 21 Networking Project

Scenario

For this assignment you will be assuming the role of a network consultant who has been contracted to define a networking problem and propose a solution. The work will be supervised by a senior consultant (your course tutor).

There are a selection of projects which need attention and you are to select one which is of particular interest to you. Initially reduce the list of possible projects to three and then, in conjunction with your supervisor, select one of these for a full project. The list of possible projects is given below.

Suggested project titles:

- A network for a local private railway with 6 stations and 3 signal boxes. The system needs to pass booking information between all stations and train status information to all authorised users. The principal station needs to process the overall management of the railway including accounting and personnel.
- A training centre requires a computer network for administration, trainees' work, research, teaching and all other managerial and educational functions.
- A local group of retail shops requires a system for stock control in each shop and central administration in the principal shop of the group.
- A small town leisure services department requires a system to integrate and manage data from its swimming pool, sports fields, bowling greens, library and museum. Data will be entered at each facility and will be collated at the local council offices.
- A small manufacturer requires a system for manufacture, stock control, despatch, finance, personnel and management information.
- A small chain of fast food outlets requires a network to allow all order and sales information to be forwarded to a central location (Main Offices) and to allow them to order materials directly from suppliers on line. There may also be a requirement to pay their suppliers on line. The main offices will perform all of the normal administration functions of a business.

Projects may be real or simulated and may be for full networks or additional networks, but the scope must be made clear in proposals.

Read through the tasks fully before you start work on the project. If you are not certain what to include in a particular task, discuss it with your supervisor. The unit content will provide guidance to what is expected.

Task 1: Identify Potential Projects

You should make an informed choice of project. In order to do this:

- a) Research three potential projects, making notes about their overall requirements.

This task provides evidence for unit 21 P1

- b) Identify your own ability to undertake potential projects. Produce a table listing:

- Things you do not know how to do and state any development and training which you will have to undertake
- Tasks you will do and the skills needed to complete a project.

This task provides evidence for unit 21 P2

Task 2: Select a Project

Produce a report which includes the following:

- Selection of one of the projects giving your reasons for your choice
- Identification and explanation of any physical constraints associated with a range of network options
- The potential impact of future developments on the project
- Comparison of a range of networks which could be used for the selected project.

This task provides evidence for unit 21 P1, P3, M1, M4

Task 3: Main Project Proposal

Produce a project plan for your chosen solution, which includes:

- Details of the network, supporting documentation, implementation methods, testing required and hardware / software installation
- The use of a suitable computer software package providing clarity and coherence
- How the network is going to work to meet the users' needs
- A full list of resources and their costs
- Proposals to meet the financial and physical requirements of the chosen solution
- Comparison of a range of alternative plans with reasons for selecting the most suitable for your purposes.

This task provides evidence for unit 21 P4, D1, P5, M2, D2, M3

Task 4: Maintaining the Network

Prepare a short presentation (e.g. PowerPoint, poster, etc) which addresses the problems of maintenance and administration of the proposed network. Your presentation should include:

- a) Potential contacts who would maintain and repair the network
- b) Identification of potential security threats to the network and the precautions which will have to be put in place to minimise the threats
- c) A range of methods for administering and managing the network.

This task provides evidence for unit 21 P6, P7, D3

Part B: Unit 24 Network Design & Administration

Scenario

As a junior consultant working for a company specialising in designing computer networks, you have been asked to work with a young company called *StudentPhones.com* to advise them on the different types of network available. You are asked to prepare a report to assist in winning the contract to design a network suitable for *StudentPhones.com*, so it is important that you show that you are knowledgeable about networking and have considered the different options available. Some background about the company is provided for you below:

StudentPhones.com was formed by two students who had just completed their university degree with the original concept of selling mobile telephones to students via an Internet web site. They bought a selection of phones in bulk and then advertised them on their web site, which proved to be far more successful than they had envisaged. Originally they had rented a small office from which all business was conducted but now they are planning to expand to other cities in the UK.

To do this they will need offices throughout the UK with secure Internet connections allowing customers to purchase by credit card and to allow the offices to communicate with each other. Each office will employ 4-6 staff with about 10 at their home base.

They want a centralised solution with all staff user accounts managed centrally and feel that a domain would be the best way forward.

In order to maintain a centralised database of products, customers, orders and related data the company requires that web services and databases should be installed at the home base only and that all customer access will be directed to the home base. The branch offices will be equipped with web-based applications allowing the employees to view all records relating to customers such as customer details, orders and so on.

An ISP will take responsibility for managing the company's domain name, and will manage all Internet traffic.

Task 1

Having considered the requirements of the company identified in the scenario, write an **Investigative Report** with the following sections:

a) Introduction

- An explanation of the role and purpose of networks
- A brief discussion of the benefits of networks such as sharing resources and data
- A brief discussion of the limitations of networks, for example in terms of security and administration requirements.

b) Network Topologies

- Provide schematics of three major LAN topologies and comment on the advantages and limitations of each
- Comment on the suitability of each of these topologies for the company in terms of cost, technical requirements and future expansion.

c) Network Domains and Services

- Describe the purpose of domains and directory services
- Consider the various domain configurations which might be used by the company in implementing the new system.

d) Conclusions

Having considered the requirements of the company, and the different networking approaches available:

- Evaluate each approach in terms of its merits, and conclude which approach would be most suitable.

This task provides evidence for unit 24 P1, M1, D1, D2, P2, M2

Task 2

- a) Using the results of your Report, propose a suitable LAN for the company, which includes a:
- Network specification
 - Schedule for implementation
 - Security policy.
- b) Explain how your specification meets the requirements of the users
- c) Evaluate the resources, roll-out procedures and requirements for setting-up and testing the new LAN.

This task provides evidence for unit 24 P3, P4, M4, M3, D3

Task 3

For any LAN to which you have administrative access:

Write an information sheet aimed at trainee network administrators, which explains the basic purpose of a number of network administration tasks, and demonstrate how to:

- carry these out using NOS tools
- set up user accounts with specified permissions
- set up a network printer and network printer access rights.

This task provides evidence for unit 24 P5, P6, P7

Note: All practical demonstrations must be evidenced by witness statement/observation records, signed and dated by your Assessor

ASSESSMENT CRITERIA

For ease of reference, the assessment criteria from the unit specifications that are relevant to assessing and grading this IVA are repeated below. You should refer to the full unit specification for information on unit content.

Assessment Evidence Unit

| Unit 21: Networking Project | | |
|--|--|--|
| To achieve a pass grade the evidence must show that the learner is able to: | To achieve a merit grade the evidence must show that the learner is able to: | To achieve a distinction grade the evidence must show that the learner is able to: |
| <ul style="list-style-type: none"> • define a range of options and select a suitable networking project • identify own goals and abilities and plan to meet any development needs • identify and explain any physical constraints relating to a range of networks • produce a project plan • explain how the network is to function for the given plan • identify appropriate contacts for the maintaining and upkeep of the network • explain what precautions need to be taken to protect the network resources from a range of security threats. | <ul style="list-style-type: none"> • analyse potential developments in networking technology which may affect the project • identify and calculate the cost of all the resources required • compare a range of project plans and propose the most suitable • compare a range of networks that could be used for the project. | <ul style="list-style-type: none"> • propose a clear and coherent plan for a networking project in an appropriate format • plan how financial and physical requirements can be met • propose a range of methods that could be followed to ensure adequate administration and management of the network. |

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Assessment Evidence Unit

| Unit 24: Network Design and Administration | | |
|---|--|--|
| To achieve a pass grade the evidence must show that the learner is able to: | To achieve a merit grade the evidence must show that the learner is able to: | To achieve a distinction grade the evidence must show that the learner is able to: |
| <ul style="list-style-type: none"> • demonstrate a knowledge of networking benefits and limitations • describe the purpose of domains and directory services • suggest a network specification that fits user requirements • produce a schedule for implementing a network design • state the basic purpose of a number of network administration tasks and show how these tasks are carried out using NOS tools • set up user accounts with specified permissions • set up network printer and network printer access rights. | <ul style="list-style-type: none"> • compare and contrast different network topologies • understand how various domain configurations might be used by an organisation building a complex network • examine a user requirement and explain the reasons why a specification meets the requirements of users • investigate a scenario and determine a security policy that effectively addresses the needs of users. | <ul style="list-style-type: none"> • evaluate the merits of different networking approaches available today • analyse a range of different network topologies indicating where cost, technical demands and future use influence choice • evaluate all the necessary resources, roll-out procedures and requirements for setting up and testing a new LAN. |