

Information Technology Practitioner/Professional NVQ *Levels 1, 2 and 3*

*Candidate logbook – core and
option units
Scheme 4324*

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Contents	Page
Introduction	5
What is the IT Professional/Practitioner NVQ?	6
How does the IT Professional/Practitioner NVQ work	7
The format of the award	8
Who will be involved in my NVQ?	12
The assessment process	19
Common questions and answers	20
Getting started	21
Candidate self assessment	21
Planning your progress	22
Your personal action plan	22
Over to you	22
Quick candidate checklist	23
Course design	25
Key skills signposting	27
Appeals and equal opportunities	31
The units	33
Health and safety in ICT and Contact Centres	33
Develop personal and organisational effectiveness	41
Customer care	53
Data analysis and data structure design	66
Interpersonal and written communication	74
Investigating and defining requirements	84
Managing software development	93
Quality management of ICT products and services	97
Remote support for products or services	101
Security of ICT systems	112
Software development – component creation	120
Software development – design	128
Software installation and upgrade	135
System management	145
System operation	151
Technical advice and guidance	159
Technical fault diagnosis	172
Technical fault remedy selection	182
Testing ICT systems	190
User profile administration	203
Working with ICT hardware and equipment	209
Further information	219

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Introduction

This pack contains information and guidance to help you to achieve your National Vocational Qualification (NVQ). NVQs are widely recognised by the employers as the most important vocational qualifications.

Unlike other qualifications, NVQs require you to take an active part in your assessment. As you make progress you will be able to demonstrate that you have the necessary practical skills and knowledge to do your work effectively and efficiently.

This Guide and Logbook will help you to plan, collect and organise the evidence you need to gain an NVQ.

Good luck!

What is the City & Guilds NVQ for IT Practitioner/Professionals?

You are about to start a programme of assessment in your workplace leading to a National Vocational Qualification. This Candidate Guide and Logbook has been produced in order to provide you with information and support as you work through achieving your qualification.

As you make progress you will be able to demonstrate that you have the necessary practical skills and the knowledge - or competence - to do your work effectively and efficiently.

What is a National Vocational Qualification?

National Vocational Qualifications (NVQs) aim to increase the skills of people, just like you, working in a wide range of industries. Developing the skills of each individual, wherever they work, and whatever they do, meets a basic individual need for personal growth. Developing your individual skills also meets the needs of your employer to be competitive and to succeed. It is a vital component for any business wishing for success, competing in domestic and world markets.

NVQs have been, and will continue to be developed for all industries, and are supported by government. They have been designed to provide valid and relevant vocational qualifications for people at work. They are about being competent in your work - being able to do something and understanding why it is done that way. They are written by industry and are known as 'national occupational standards'.

How does the NVQ for IT Professional/Practitioners work?

The NVQ for IT Practitioner/Professionals is made up of a number of different **units**. Each **unit** describes the standards of a broad area of work that a competent person should be able to perform. There may be a unit summary which describes what the unit is about and clarifies key words and phrases.

Each unit is broken down into a number of **Areas of Competence (AOCs)**. Taken together, these show what needs to be done to achieve the whole unit.

The AOCs will include information about

- the standards of performance expected
- the types of evidence which you will need to produce
- the knowledge required.

There are two types of unit in this qualification:

Mandatory - you will have to achieve these in order to achieve the qualification overall

Optional - you may be able to choose from a range of optional units depending on where you work in the industry

To gain your NVQ certificate you will be expected to show competence in the mandatory and optional units and, when you have successfully completed the relevant units, you will be able to claim your NVQ. The certificate will be awarded by City & Guilds. Even if you only complete some of the units, you will still be able to claim unit certification.

Details about the structure of the qualification(s), the units etc will be provided by your centre.

The format of the award

The NVQ for IT Practitioner/Professionals is made up of a number of **units**. Each **unit** contains an **Area of Competence (AOC)** which describes the standards of a broad area of work that a competent person should be able to perform. A detailed description with each unit explains what is covered by the unit.

Each unit is broken down into a number of **Components**. Taken together, these show what needs to be done to achieve the whole unit.

Unit values (UVs) have been used to establish a value-based approach to the qualification design. UVs are intended as a straightforward mechanism for enabling a flexible qualification structure while ensuring that all qualifications in the NVQ for IT Practitioner/Professionals are of a similar 'weight' or amount of content.

Each qualification must contain:

- AOC 'Develop personal and organisational effectiveness' at least at the level of the qualification for qualifications at levels 1 to 4
- AOC 'Health & Safety in ICT and Contact Centres' at least at Level 1

To achieve a full NVQ for IT Practitioner/Professional, candidates must achieve a minimum total of UVs.

These are:

- 40 UVs for a level 1 qualification
- 100 UVs for a level 2 qualification
- 180 UVs for a level 3 qualification
- 280 UVs for a level 4 qualification

At least 60% of the unit values of the award must be achieved at the level of the qualification. These values (rounded) are as follows:

- 25 for level 1
- 60 for level 2
- 110 for level 3
- 170 for level 4.

The format of the NVQ for IT Practitioner/Professional

Unit Title	Level 1	Level 2	Level 3	Level 4	Level 5
Health and safety in ICT and Contact Centres	5	-	30	40	50
Develop personal and organisational effectiveness ¹	10	20	30	40	-
Customer care	10	20	30	40	50
Data analysis and data structure design	-	15	25	-	-
Interpersonal and written communication	5	15	30	40	-
Investigating and defining requirements	-	20	30	40	-
Managing software development	-	-	30	40	50
Quality management of ICT products and service	-	-	30	40	50
Remote support for products or services	10	20	30	40	50
Security of ICT systems	5	-	30	40	50
Software development – component creation	-	20	30	-	-
Software development – design	-	25	35	45	-
Software installation and upgrade	10	20	30	40	-
System management	-	15	30	40	55
System operation	10	20	30	40	-
Technical advice and guidance	5	15	30	40	55
Technical fault diagnosis	10	20	30	40	-
Technical fault remedy selection	5	15	25	35	-
Testing ICT systems	10	20	30	40	-
User profile administration	-	15	25	35	-
Working with ICT hardware and equipment	10	20	30	40	-
Restricted option units²					
Support the efficient use of resources.	-	-	30	-	-
Contribute to the selection of personnel for activities.	-	-	30	-	-
Contribute to the development of teams and individuals	-	-	30	-	-

¹ With effect from 1 April 2006, the points values for this unit were increased by 5 points at each level by the Sector Skills Council e-skills UK

² Learners may also select a maximum of two units from the following list

Unit Title	Level 1	Level 2	Level 3	Level 4	Level 5
Lead the work of teams and individuals to enhance performance	-	-	30	-	-
Respond to poor performance in your team	-	-	30	40	-
Facilitate meetings	-	-	30	40	-
Contribute to improvements at work	-	-	-	40	-
Manage the change in organisational activities	-	-	-	40	50
Manage the use of physical resources	-	-	-	40	50
Manage the use of financial resources	-	-	-	40	50
Select personnel for activities	-	-	-	40	50
Develop teams and individuals to enhance performance	-	-	-	40	50
Manage the performance of teams and individuals	-	-	-	40	50
Deal with poor performance in your team	-	-	-	40	50
Chair and participate in meetings	-	-	-	40	50
Determine the effective use of resources	-	-	-	-	50
Delegate work to others	-	-	-	-	50
Develop operational objectives for the project	-	-	-	20	-
Develop a detailed schedule for the project	-	-	-	20	-
Identify perceived risks and evaluate options for their control	-	-	-	20	-
Co-ordinate, monitor and control project schedules	-	-	-	20	-
Control hand-over of responsibility for the project	-	-	-	20	-
Ensure the completion of project activities	-	-	-	20	-
Develop strategic objectives for the project	-	-	-	-	25
Identify and evaluate options for the project	-	-	-	-	25
Prepare the business case for the project	-	-	-	-	25
Prepare a project brief	-	-	-	-	25
Identify strategic risk and evaluate options for minimising project risk	-	-	-	-	25

Unit Title	Level 1	Level 2	Level 3	Level 4	Level 5
Develop outline programmes or schedules for projects	-	-	-	-	25
Specify activities for project schedules	-	-	-	-	25
Review the progress of projects	-	-	-	-	25
Identify individual learning aims and programmes	-	-	30	40	-
Agree learning programmes with learners	-	-	30	40	-
Develop training sessions	-	-	30	40	-
Enable learning through presentations	-	-	30	-	-
Enable learning through demonstrations and instruction	-	-	30	-	-
Enable individual learning through coaching	-	-	30	-	-
Enable group learning	-	-	30	-	-
Support learners by mentoring in the workplace	-	-	30	40	-
Support and advise individual learners	-	-	30	40	-
Monitor and review progress with learners	-	-	30	40	-
Support competence achieved in the workplace	-	-	30	-	-
Sector specific unit³	10	20	30	40	-
Internets and intranets	5	15	25	-	-
Email	5	15	25	-	-
Word processing	10	20	30	-	-
Spreadsheets	10	20	35	-	-
Databases	10	20	35	-	-
Websites	10	20	35	-	-
IT artwork and images	10	20	35	-	-
IT Presentations	10	20	30	-	-

³ At the discretion of City & Guilds

Who will be involved in my NVQ?

Assessment for your award is carried out at your centre which has been approved by City & Guilds. Your centre may be your place of work, a college, training agency or a combination of these.

The people involved in your assessment are as follows:

The candidate

That's you. Your responsibilities as a candidate are to:

- negotiate and agree an assessment programme with your assessor
- negotiate and develop a personal action plan with dates for review and assessment
- collect the evidence which proves your competence in your job
- organise and reference the evidence in a portfolio
- judge the evidence against the standards of competence to see whether it is adequate to present for assessment
- present the evidence for assessment; this may include:
 - attending an assessment interview
 - being available to discuss your evidence with the internal and
/or external verifier if requested.

Later in this guide we will explain how you can identify and collect evidence.

We will also explain what is meant by assessment and how you can prepare for being assessed in your daily work.

The assessor

- will have experience in your area of work, must be occupationally competent and is most likely to be your immediate supervisor or manager
- will themselves have achieved or be working towards an NVQ qualification allow them to act as an assessor
- will help you plan and organise your evidence
- is responsible for making the decision about your evidence and judging when you are competent.

The internal verifier

- is responsible for maintaining the quality of assessment within the centre by checking and validating assessment decisions made by assessors
- will have experience in your area of work and must be technically competent
- will themselves have achieved or be working towards an NVQ qualification to allow them to act as an internal verifier. In some circumstances the internal verifier might also be an assessor.

The external verifier

- is appointed by City & Guilds to ensure that all assessments undertaken in your centre are fair, valid, consistent and that your centre meets the required national standard
- will make regular visits to your centre to observe assessments and examine portfolios of evidence
- makes regular reports to City & Guilds confirming what happens with assessment practice in your centre.

The expert witness

Wherever possible, the evidence which you produce should be witnessed. For example your assessor, line manager or experienced colleagues may witness an activity or authenticate a document as being your own work.

Witness status

Witnesses fall into three main categories of experience:

1. Occupational expert and A1, A2 / V1, V2 assessor who is familiar with the standards
2. A1, A2 / V1, V2 assessor without occupational competence
3. Occupational expert who is familiar with the standards.

In some circumstances it may be possible to accept witness testimony from a non-occupational expert, e.g. for evidence for a non-vocationally specific skill such as dealing with clients, validating a competition result. In these cases, the following two categories of witness may be valid:

4. Occupational expert who is not familiar with the standards
5. Non-expert not familiar with the standards.

Why do you need witnesses?

It is important to demonstrate that the evidence was produced by you under the circumstances described. The witness is therefore able to observe and report on your performance on tasks which produce evidence towards the NVQ. **Only the approved assessor is qualified to judge your evidence.** The job of the expert witness is to report to the assessor their observations of your performance.

How do you involve a witness?

The key to this is planning. In many cases someone, for example a colleague, may naturally be involved with your work and so be able to witness and authenticate evidence. However, if the work is usually unobserved, you might arrange for someone to be present (where practical) to observe your performance. Alternatively where you are working directly with or for a customer, you might ask the customer to act as a witness.

What do they have to do?

After observing you work, the witness will need to write a short statement describing what you actually did. The witness should be aware of performance criteria for the activity and the evidence requirements which are explained in the standards.

One person may witness many pieces of evidence and, on each occasion, the witness must sign and date the Witness Statement form. You must ensure that each witness is recorded, with a signature in the Witness Status List. **Only the approved assessor is qualified to judge the candidate's evidence.** The

job of the expert witness is to report to the assessor their observations of the candidate's performance. A Witness Statement Form and a Witness Status List have been included for you to photocopy and use in the section of this guide *Documents provided for inclusion in your portfolio*.

How will my competence be assessed?

Occupational competence can be described as the consistent demonstration of skill, knowledge and understanding, to the standard specified by the performance criteria for each unit of the NVQ. Each unit relates to competence in a different area of activity within a job.

Assessment of your competence will be based upon realistic work place situations, performing purposeful and recognisable tasks which will require a combination of skills and related knowledge. For each unit of the NVQ the evidence requirements are clearly stated and support the performance criteria.

Achieving your NVQ requires you to provide sufficient evidence which shows that you can work to the National Occupational Standards contained within the qualification.

Most assessment for your NVQ will be carried out by your assessor observing you at work and by questioning you about what you are doing. There are four basic sources of evidence and you may collect evidence from all of them:

Performance at work

Observation in the workplace is an essential source of evidence. Your assessor will watch you working and assess your performance against the National Occupational Standards. Assessment guidance and examples of evidence have been provided for each element in the standards. Evidence may also be provided by witness statements, work records, job sheets, or a diary of your work. Although evidence can be provided by witnesses, no unit of your NVQ can be signed off as complete without the involvement of a qualified assessor.

Performance of specially set tasks

You may be asked to undertake a particular activity, e.g. a task, project or case study, often in a college or other training environment.

Questioning

Questioning may be oral or written, usually occurring as a result of an observed assessment. Your assessor will ask you questions to make sure you have the necessary knowledge and understanding to carry out your job activities to the national standard. Answers to questions will be recorded in your portfolio.

Historical evidence

You may have done things in the past which are applicable to your NVQ. These may be used as evidence, provided that they are sufficiently current and relevant to the NVQ standard, e.g. a relevant qualification. This is sometimes known as Accreditation of Prior Experiential Learning (APEL).

Simulation

The term simulation refers to the simulation of work tasks and activities – not to the use of IT. Such simulation is permitted for assessing any optional units. The optional units relate to the techniques involved in using IT and these must always be assessed at least in part through evidence gained from practical tasks or activities involving the creation of documents, spreadsheets, web pages or other products (either paper based or in digital form). All assessment of optional units must be based on the use of real IT software and hardware to carry out tasks and activities that may be simulated.

Simulation is not permitted for the mandatory unit. Any sector specific unit must be assessed according to the requirements of that sector's Assessment Strategy.

Where tasks and activities are simulated they must be undertaken in a realistic working environment.

A realistic working environment is defined by the following criteria:

- based on a work task, activity or scenario that is sufficiently challenging for the level of the understanding and skills to be assessed
- includes a comprehensive range of demands and constraints typical of those that would be met in a real work context
- gives candidates access to people, equipment and materials that would be normal for the tasks or activities represented
- places candidates under pressures of time that would be normal in the workplace for the type of tasks and activities represented
- is replicable, in order to allow opportunities for reassessment under comparable conditions, where necessary.

What is evidence?

Evidence is what you will need to provide in order to prove your competence, your ability to do the job and so meet the standards.

You can draw on past experience to provide such evidence as well as collecting evidence from your current job. Your evidence will need to be filed and indexed in a portfolio - but guidance on this follows. First we need to concentrate on what are the potential sources and what is acceptable as evidence.

Background evidence

A copy of your CV, a copy of your previous or current job description, any previous certificates which relate to this award.

You can also include performance evidence from previous experiences and achievements.

- CV
- Job descriptions
- Certificates
- Records of achievement
- Accounts of experience
- Case studies or projects from previous work
- Licences
- Records of courses attended
- Staff appraisals
- Products
- Endorsements
- Employer references

If you wish to bring forward a large amount of evidence from past experience, please discuss this with your assessor to help you plan the presentation of this evidence.

Observed performance and products of performance

Work is a natural source of evidence and if your work includes the activities described in the elements for any of the units of the NVQ, then your assessor can readily observe you to judge your competence, particularly if the assessor is your supervisor or line manager. If the activity covered by a unit is rare and is not likely to occur during the assessment period, then your assessor may advise you to use an alternative source of evidence.

Often there are products from the assessed activity which should be retained as a valuable source of evidence, for example:

- Letters relating to work
- Completed Forms
- Job Sheets
- Plans
- Diaries
- Completed projects, case studies or assignments that are part of your work
- Finished or end products
- Witness statements about your work
- Contact with clients
- Memos
- Reports
- Logbooks
- Checklists
- Tape recordings
- Visual aids/photographs/videos
- Authenticated reports from appropriate personnel, e.g. line managers
- Staff appraisals
- References received
- Witness Statements from clients

Supplementary evidence

Where it is not possible to gain sufficient performance evidence through direct observation of your work activities or products of this work, it will be necessary for your assessor to seek supplementary evidence.

This may be done by asking you to:

- provide answers to oral or written questions
- attend an interview
- complete written tests
- provide a written personal account of competence to support other evidence.

What is a portfolio?

Most candidates working to achieve an NVQ find that the simplest way to collect their evidence is in a loose-leaf lever arch file or binder.

This is called a **Portfolio of Evidence**.

A portfolio can be any shape or size, depending on the type of evidence you want to put forward for assessment. However, it is usual to use an A4 ring binder or lever arch folder.

Your portfolio will need to be a well organised, structured collection of all the evidence you have collected, gathered together and referenced to the National Occupational Standards. In order to achieve this, it is recommended that dividers are used between each unit and the evidence you have collected, so that the portfolio is easy to work through.

You are required to present your evidence quite simply to show - what you can do, and - what you know. It should be presented to demonstrate how it matches the standards of performance, the evidence and the underpinning knowledge requirements. You will discover that one piece of work might provide evidence for more than one element or unit. It must be correctly cross referenced using the evidence summary forms provided.

Types of evidence to be filed in your portfolio will include:

- assessment action plans
- records of assessment
- assessor reports
- witness statements
- a record of products from your work
- reports your manager or supervisor
- details of questions you have been asked
- historical evidence (APL)

Your assessor will regularly inspect your portfolio, providing support and guidance as appropriate. As you begin to collect evidence you must index it using the evidence summary, with cross references to the National Occupational Standards. Your

assessor will show you how to do this because it will identify what you must do to complete the unit.

At the beginning of the section *Documents provided for inclusion in your portfolio* is a list of the order of all the information to be filed in your portfolio. The list also makes reference to the documents we have produced for you to photocopy for use in your portfolio. You will find copies of the documents in the section in this guide. In some cases, it may not be possible to include the evidence in the portfolio eg if it is bulky, if it contains confidential information. In these cases, you must indicate in the portfolio where the evidence can be found.

You must have your portfolio available when requested by the assessor and the internal verifier. The external verifier will also need to look at your portfolio during a visit.

Only assessors and internal verifiers can confirm that you have completed a unit and complete your record of achievement.

Supporting Information

The following categories of information are not regarded as Performance Evidence, nor will they meet your requirements to demonstrate your Knowledge and Understanding.

They will however, provide valuable supporting information for you, which should be kept in a separate information file.

This information should not be included as part of the Portfolio of Evidence:

- leaflets or booklets supporting legislative requirements
- the session plans or overall content of training programmes
- any notes or information handouts from training courses
- booklets explaining company operating policy or work procedures
- handbooks describing eg how the company computer system works
- technical information about specific products supplied by manufacturers
- product catalogues.

The Assessment Process

Planning

Step 1 Your assessor will discuss with you which units you are going to start first.

To help you decide this, in the section of the guide entitled *Getting started*, you will find a self assessment process to work through. When you have completed the self assessment you will have an overall action plan of what you have to do to achieve the NVQ. This you will file in your portfolio along with your personal details.

Step 2 Having decided where to start, you will need to thoroughly read through the unit and the elements in question.

Step 3 You and your assessor will discuss any historical evidence you may have.

Step 4 Looking at the evidence requirements, you and your assessor will work out

- how much can be assessed in your workplace
- how much evidence will need to be gathered through specially set tasks
- how your knowledge will be assessed, by oral questions, etc.

This is your **assessment action plan** which you will need to file in your portfolio (Form NVQ7).

Evidence

Step 5 You will produce evidence by

- being observed performing tasks in line with the standards, a number of times
- being questioned by your assessor during and after observations
- presenting projects and assignments, answering written questions, where necessary
- keeping documents, such as work logs, job cards, checklists, letters, etc.

Feedback

Step 6 After each assessment:

- if your performance has not been completely successful you will receive further training and more experience which will be recorded
- if your performance is successful it will be recorded.

An **assessment report** will be completed by your assessor identifying any further action to be taken. This will be filed in your portfolio with the records of the assessment (Form NVQ8).

You will be given **feedback** by your assessor which will be recorded and filed in your portfolio as you might need to take further action agreed with your assessor (Form NVQ9).

Step 7 With reference to the agreed assessment and action plans, you will regularly discuss your performance and progress with your assessor.

Common questions and answers

Are there any entry requirements for NVQs?

No, the level you take will depend on your skills and knowledge.

Do I have to be on a training course to enter for an NVQ?

Not necessarily. If you already have the necessary skills and knowledge you can be assessed without further training. However, you need to register with an approved City & Guilds centre where the assessment can be arranged. In practice, employers and colleges approved as centres, offering assessment for NVQs do provide training to satisfy the requirements of the underpinning knowledge and understanding.

How long does an NVQ take to complete?

There is no set time limit in which you must complete your NVQ. However, standards which make up the qualification are normally revised every five years and you should aim to complete your qualification before then.

What happens if I change jobs or go to another assessment centre?

You will be able to continue your NVQ provided you move to another approved centre.

Do I have to do all of the units in the NVQ to get a certificate?

Once you have completed all the necessary units for an NVQ, and they have been confirmed by your internal verifier, your centre will apply to City & Guilds for a certificate. You will also be issued with a Certificate of Unit Credit which will list all the units which you have achieved.

If you are not aiming for a full NVQ, your centre can apply for a Certificate of Unit Credit, listing those units which you have achieved.

Please direct any questions about your certificate to staff at your centre.

What do I do if I am not happy with an assessment decision?

If an occasion occurs when you do not agree with a decision made by your assessor, you should follow the centre's appeals procedure. Any unresolved problems should be referred to City & Guilds.

Getting started

We know that candidates starting an NVQ are already very busy people, because of the work they do. The advice which follows is intended to help you to achieve the award whilst carrying out your role and responsibilities at work.

One practical way to begin is to compare each unit of competence from the National Occupational Standards to your current job role. This will give you one or more units where you can begin to identify evidence and perhaps a list in which you feel you will need training or practice.

A more detailed way to start is to go through the self analysis questions which follow.

They have been designed to help you to identify the units in which you are

- competent
- partially competent
- not at all competent or have not yet had the opportunity to perform.

Using the following questions, consider each unit. This activity will also help you to become familiar with the content of each unit so that you can look for economies in time when planning your evidence. Some evidence may be valid for more than one unit.

Candidate Self Assessment

Taking each unit of competence separately, work through the following questions and make notes on your training needs and assessment opportunities. In the *Documents provided for inclusion in your portfolio section*, a form (Form NVQ5) is included to help you to summarise and produce an action plan.

- a)** Is this a part of your current job role and one in which you consider yourself competent?
If your answer is **Yes** - Discuss assessment opportunities with your assessor/mentor
If **No** - move on to question **b**
- b)** Did this ever form part of your job role, with this or any other organisation?
If so, do you still consider yourself competent?
If your answer is **Yes** - Discuss assessment opportunities with your assessor
If **No** - move on to question **c**
- c)** Does this form part of your current job role, but in an area in which you are not yet competent?
If your answer is **Yes** - Discuss training needs with appropriate person
If **No** - move on to question **d**
- d)** Discuss training needs, assessment opportunities with your assessor and identify what action you need to take and agree a date for completion.

Planning your progress

A planned approach will ensure the most economical use of your time and efforts.

Your Personal Action Plan

Now you have completed the self analysis exercise, you and your assessor should be in a position to agree which unit or units you will start working on. You will now be able to plan the collection of evidence for the elements which make up each unit.

As you begin to plan, do remember that evidence for one element from a unit can often be used for other elements from other units.

Each element will require more than one type of evidence.

Evidence must cover all **the performance criteria**, the **evidence requirements** and **the knowledge and understanding** for each element.

Planning will save time.

When you fill in your assessment action plan identifying what kind of evidence you could provide, ask yourself the following questions

- can my **performance** be **observed** by the assessor?
- in the absence of the assessor, can a **witness authenticate** my evidence? e.g. line manager
- can I bring forward any evidence or **previous achievement**?
- can I include any **records, documents**, etc.?
- are there any **requirements** where I cannot easily produce evidence?
- is reoccurring evidence work based?

Refer back to the section in this guide about the assessment process and discuss your proposals with your assessor and agree your action plan. A document has been provided for this activity (Form NVQ7).

Over to you!

It's up to you now because it's your qualification that you are working towards.

We hope you enjoy collecting and organising the evidence for your portfolio and that you develop your skills by having a wider experience.

Remember:

- Getting started is usually the most difficult step in the whole process
- Once you have started, however, the process of evidence collection becomes easier as you become used to it
- Plan carefully using evidence for more than one element wherever possible
- Keep up the momentum, don't get side tracked by other events.

- Complete work on time, don't get behind with your schedule and action plan
- Ask your assessor for support and guidance when you need it
- Finally - on the next page you will find a Quick Candidate Checklist just to keep you on the right track. Good luck - and remember to enjoy achieving your NVQ!

Quick Candidate Checklist

- Check the content of the mandatory and optional units depending on where you work in the industry.
- Complete your Self Analysis.
- Agree with your assessor where you will begin to collect evidence. Focus initially on those units for which you have readily available evidence.
- Identify the evidence you have collected and agree dates for assessment with your assessor. Agree dates for observed assessment, this is your assessment plan.
- Collect evidence and complete the evidence summary sheet.
- Submit the evidence to your assessor for initial assessment.
- Agree when you should give your portfolio to your assessor.
- The assessor will complete an assessment report for each element and return the portfolio to you.
- The assessment report will indicate
 - a) whether the evidence is sufficient in quality and quantity to meet the standard
 - b) if the performance criteria have been met
 - c) if the evidence meets the requirements for knowledge and understanding
 - d) that the requirements for performance evidence have been met
 - e) what additional evidence, if any, you need to provide
 - f) on which areas an interview to review progress will focus.
- If the evidence produced in the portfolio and at the interview clearly demonstrate your competence, then your assessor will 'sign off' the element(s) or unit(s) as complete.
- The cycle will then begin again until you have all the units completed that you intended to achieve.

Your assessor will suggest that you initially submit your portfolio when you have completed one or more elements so that you receive guidance and feedback at an early stage. After that the pace and pattern you establish with your assessor will be negotiated to suit you both.

Remember

1. You must provide sufficient evidence to meet all the criteria in every element in each unit. For each element you must therefore
 - satisfy all performance evidence requirements
 - meet all the standards of performance

- cover all aspects of the range
 - satisfy all knowledge and understanding requirements.
2. You will be assessed as competent or not yet competent based on whether you have met all the criteria specified in each element.
 3. It will not always be possible to provide enough evidence to cover all the standards of performance or range in an element as a result of one activity.
 4. One piece of evidence may be relevant to more than one element or unit.

You do not have to work through the units in any particular order. You may therefore collect evidence for several units at a time.

Course design

Teacher/assessors should familiarise themselves with the structure and content of the award before designing an appropriate course; in particular they are advised to consider the knowledge and understanding requirements of the NVQ.

City & Guilds does not itself provide courses of instruction or specify entry requirements. As long as the requirements for the award are met, teachers/assessors may design courses of study in any way that they feel best meets the needs and capabilities of the candidates. Units are broadly the same size and centres may deliver them in any order they wish. Centres may wish to introduce other topics as part of the programme which will not be assessed through the qualifications, eg to meet local needs.

It is recommended that centres cover the following in the delivery of the course, where appropriate

- Health and safety considerations, in particular the need to impress to candidates that they must preserve the health and safety of others as well as themselves
- Core Skills (such as Communication, Application of Number, Information Technology, Working with others, Improving own learning and performance, Problem solving).

Centre and scheme approval

Centres wishing to offer City & Guilds qualifications must gain approval.

New centres must apply for centre and scheme approval.

Existing City & Guilds centres will need to get specific scheme approval to run this award.

Full details of the process for both centre and scheme approval are given in *Providing City & Guilds Qualifications – a guide to centre and scheme approval*, which is available from City & Guilds' regional offices.

City & Guilds reserves the right to suspend an approved centre, or withdraw its approval from an approved centre, to conduct a particular City & Guilds scheme or particular City & Guilds schemes, for reasons of debt, malpractice or for any reason that may be detrimental to the maintenance of authentic, reliable and valid qualifications or that may prejudice the name of City & Guilds.

Health and safety

The requirement to follow safe working practices is an integral part of all City & Guilds' qualifications and assessments, and it is the responsibility of centres to ensure that all relevant health and safety requirements are in place before candidates start practical assessments. Should a candidate fail to follow health and safety practice and procedures during an assessment (eg practical assessment, assignment), the test must be stopped and the candidate advised of the reasons why. The candidate should be

informed that they have failed the assessment. Candidates may retake the assessment at a later date.

IT Practitioner/Professional NVQ - Key skills signposting Summary Relationship Table

The following tables are intended to indicate the broad potential for key and core skill coverage in each Area of Competence (AOC) by AOC levels 1 to 3 and by Key Skill levels 1 to 4.

It should be noted therefore that potential coverage (shaded areas) should be regarded as a relatively general indication of where the opportunity to demonstrate some or all parts of a particular skill are likely to be found.

QCA Key Skill	Communication				Application of Number				Information Technology				Working with others				Problem solving				Improving own learning and performance			
Skill Level	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Areas of Competence and level																									
Health and safety in ICT and contact centres	1	■												■				■							
	3	■												■				■							
Develop personal and organisational effectiveness	1	■												■				■				■			
	2	■												■				■				■			
	3	■												■				■				■			
Customer care	1	■								■				■				■							
	2	■								■				■				■							
	3	■								■				■				■							
Data analysis and data structure design	2	■				■				■								■							
	3	■				■				■								■							
Interpersonal and written communication	1	■								■				■											
	2	■								■				■											
	3	■								■				■											
Managing software development	3	■				■				■				■				■							
Quality management of ICT products and services	3	■												■				■							

QCA Key Skill	Communication				Application of Number				Information Technology				Working with others				Problem solving				Improving own learning and performance			
Skill Level	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Areas of Competence and level																						
Remote support for products or services	1	■	■	■					■	■	■					■	■	■				
	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
Security of ICT systems	1	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
Software development – component creation	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
Software development – design	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
Software installation and upgrade	1	■	■	■					■	■	■					■	■	■				
	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
System management	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
System operation	1	■	■	■					■	■	■					■	■	■				
	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				
Technical advice and guidance	1	■	■	■					■	■	■					■	■	■			■	■
	2	■	■	■					■	■	■					■	■	■			■	■
	3	■	■	■					■	■	■					■	■	■			■	■
Technical fault diagnosis	1	■	■	■					■	■	■					■	■	■				
	2	■	■	■					■	■	■					■	■	■				
	3	■	■	■					■	■	■					■	■	■				

QCA Key Skill	Communication				Application of Number				Information Technology				Working with others				Problem solving				Improving own learning and performance			
Skill Level	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Areas of Competence and level																							
Technical fault remedy selection	1																						
	2																						
	3																						
Testing ICT systems	1																						
	2																						
	3																						
User profile administration	2																						
	3																						
Working with ICT hardware and equipment	1																						
	2																						
	3																						
e-mail	1																						
	2																						
	3																						
Word processing software	1																						
	2																						
	3																						
Spreadsheet software	1																						
	2																						
	3																						
Database software	1																						
	2																						
	3																						

QCA Key Skill	Communication				Application of Number				Information Technology				Working with others				Problem solving				Improving own learning and performance			
Skill Level	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Areas of Competence and level																									
Website software	1	■								■				■				■							
	2	■								■				■				■							
	3	■								■				■				■							
Artwork and imaging software	1	■								■				■				■							
	2	■								■				■				■							
	3	■								■				■				■							
Presentation software	1	■								■				■				■							
	2	■								■				■				■							
	3	■								■				■				■							

Appeals and equal opportunities

If an occasion should arise when a candidate is not satisfied with the assessor's judgement of his/her competence during the assessment process, or a candidate feels that the opportunity for assessment is being denied, the internal verifier and centre co-ordinator should address the problem. If, however, the problem cannot be resolved, the external verifier may be approached to offer independent advice. In unresolved cases, the external verifier may refer this back to City & Guilds. All appeals must be clearly documented by the centre co-ordinator and made available to the external verifier or City & Guilds if advice is required.

Should occasions arise when centres are not satisfied with any aspect of the external verification process, they should contact City & Guilds Quality Standards department.

Access to the NVQ framework is open to all, irrespective of gender, race, creed, age or special needs and there are no formal entry requirements. The centre co-ordinator should ensure that no candidate is subjected to unfair discrimination on any grounds in relation to access to assessment and to the fairness of the assessment.

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Health and safety in ICT and Contact Centres – levels 1 and 3

This is compliance with Health and Safety legislation when working in ICT and Contact Centres.

The basis of Health and Safety law is the "Health and Safety at Work etc Act 1974". The Act sets out the general duties which employers have towards employees and members of the public, and employees have to themselves and to each other.

What the law requires here is what good management and common sense would lead individuals and organisations to do anyway: that is, identify risks and take sensible measures to tackle them.

Health and Safety legislation impacts not only on those who are employed at work, but on visitors, bystanders and customers who may be affected by actions of those engaged in work activities.

Health and Safety legislation is subject to constant review, and new legislation is introduced on a regular basis. This constant change must be monitored by organisations and individuals to identify actions required to remain compliant. Interpretation of the legislation may also be modified as a result of case law or other legal guidance.

Level 1 applies to work activities at all levels and describes the universal responsibilities that everyone at work has for Health and Safety.

Level 3 is concerned with the management of Health and Safety and will apply primarily to those with a particular responsibility for the maintenance of Health and Safety. However Unit 101 at level 1 may be substituted in the level 3 qualification if your job role does not include sufficient responsibility for Health and Safety.

You are likely to be in a role where you will have responsibility for some of the day-to-day management of Health and Safety within your work area, carrying out risk assessments, making sure Health and Safety procedures are complied with and providing some guidance to those around you on the Health and Safety aspects of their jobs. All of the evidence must be **in the context of Information Technology**.

This is a mandatory unit and **must** be assessed in the workplace.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1</p> <p>Comply with relevant Health and Safety requirements</p>	<ul style="list-style-type: none"> • complying with organisational Health and Safety procedures • minimising Health and Safety risks related to work activities. 	<ul style="list-style-type: none"> • what types of Health and Safety hazard can arise as a result of work activities • the difference between hazards and risks • available sources of Health and Safety information
<p>Level 3</p> <p>Monitor Health and Safety procedures</p>	<ul style="list-style-type: none"> • carrying out formal Health and Safety risk assessments. • monitoring compliance with relevant parts of Health and Safety procedures • providing guidance to immediate colleagues on Health and Safety. 	<ul style="list-style-type: none"> • specified parts of organisational Health and Safety procedures • what types of Health and Safety hazard can arise as a result of work activities • relevant parts of Health and Safety legislation and regulations

Level 1 – Health and safety in ICT and Contact Centres 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This must be done while carrying out at least **TWO** different tasks typical of your job in Information Technology and demonstrating your competence in:

1. **Complying** with your organisation's Health and Safety procedures eg: Isolating power before working on equipment as instructed
2. **Minimising** Health and Safety risks related to work activities eg: maintaining a clean, tidy work area

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of your job in Information Technology**:

1. **Types of Health and Safety hazard**, eg:
 - use of display screens
 - incorrect use of protective equipment
 - improper use of tools and equipment
 - lifting or handling heavy objects
 - excessive noise
 - confined spaces
 - working at height
 - electricity
 - hazardous substances.
2. The difference between hazards and risks, giving simple examples.
3. Available sources of Health and Safety information.

Assessment Guidance

You will need to produce evidence from at least **TWO** tasks, demonstrating skills, techniques and knowledge outlined in the unit. The tasks should be as different as possible, and, together they must be typical of the jobs that you normally do.

How do I demonstrate Knowledge?

Since the law requires your employer to provide you with Health and Safety information and training relevant to your job, it is very likely that you will have a good deal of the required knowledge already. Firstly, assuming you have been properly trained to do your job, you should be able to identify the parts of it that could be dangerous and result in someone being injured or property being damaged eg:

- an open cable duct in the floor of a busy office
- carrying ICT equipment
- the need to enter a roof space to lay cables
- the presence of live electrical terminals near to your work area

Secondly, you need to be able to explain the difference between a hazard and a risk, giving some examples relevant to your particular job eg:

- a damaged power cable – **hazard**
- the chances of a damaged power cable causing electric shock or system failure and the amount of damage it might cause – **risk**

Lastly, you need to show that you know where to obtain Health and Safety information eg:

- organisational procedures and requirements
- equipment or system manuals
- Health and Safety Executive (HSE) publications

Some of the ways in which you could demonstrate this knowledge are:

- answers to a knowledge test at the end of training, or specially designed and approved for this qualification
- as part of a question and answer session or discussion with your assessor
- as part of a work task

How can I satisfy the skills and techniques part?

The only situation in which this unit can be assessed is as part of real work tasks. The best way to do this is first of all to make sure that you know all the safety procedures and precautions for your job; particularly for the task you are about to do. Secondly during the work task, you should make sure your assessor or expert witness *knows* you are following those procedures eg:

- point out the hazards to them
- explain and/or show how you minimise the associated risks
- ask them to watch while you make an item or an area safe
- explain to them what you are doing
- explain why you are doing it

Summary

This mandatory unit is designed to be assessed during real work tasks – successful completion will demonstrate that you know how to work safely in a given situation, that you know how to recognise and minimise risks and that you know where to find information on basic Health and Safety issues.

Level 3 – Health and safety in ICT and Contact Centres 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks covering in total the skills and techniques listed below. The tasks must be done **in the context of Information Technology**:

1. Carrying out formal Health and Safety risk assessments

eg:

- COSSH assessments
- working at height
- confined space
- dangerous voltages
- workstation design/set-up
- microwave radiation (wireless network)

2. Monitoring compliance with relevant parts of Health and Safety procedures eg:

- participating in audits of working practices and inspections of work
- gathering and recording information on Health and Safety
- initiating suitable actions to deal with identified breaches of Health and Safety

3. Providing guidance to immediate colleagues on Health and Safety eg:

- clarification of Health and Safety procedures
 - promotion of safe working practices
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of your job in Information Technology**:

1. What types of health and safety hazard can arise as a result of work activities, eg:

- use of display screens
- incorrect use of protective equipment
- improper use of tools and equipment
- lifting or handling heavy objects
- excessive noise
- electricity
- hazardous substances.

2. The difference between hazards and risks, giving simple examples.**3. Available sources of health and safety information**

4. Specified parts of organisational Health and Safety procedures i.e.: those procedures that are applicable to your own job role and those of people you may be responsible for or work with.

5. Relevant parts of Health and Safety legislation.

The Management of Health and Safety at Work Regulations 1999 (the Management Regulations) generally make more explicit what employers are required to do to manage health and safety under the Health and Safety at Work Act. Like the Act, they apply to every work activity. The main requirement on employers is to carry out a risk assessment. Risk assessment should be straightforward in a simple workplace such as a typical office and should only be complicated when dealing with serious hazards.

Other regulations require action in response to particular hazards or in industries where hazards are particularly high. A list of the main regulations is shown below. Many are not qualified by 'reasonable practicability'.

Regulations are law, approved by Parliament usually made under the Health and Safety at Work Act. Some regulations apply across all companies, such as the Manual Handling Regulations, which apply wherever things are moved by hand or bodily force, and the Display Screen Equipment Regulations, which apply wherever VDUs are used. **Other regulations apply to hazards unique to specific industries.**

The following list covers regulations which will be typically applicable **but others may apply in individual working environments:**

- Health and Safety at Work etc Act 1974
- Management of Health and Safety at Work Regulations 1999
- Health and Safety (Display Screen Equipment) Regulations 1992
- Personal Protective Equipment at Work Regulations 1992
- Provision and Use of Work Equipment Regulations 1998
- Manual Handling Operations Regulations 1992
- Noise at Work Regulations 1989
- Electricity at Work Regulations 1989
- Control of Substances Hazardous to Health Regulations 2002 (COSHH)
- Workplace (Health, Safety and Welfare) Regulations 1992
- Health and Safety (First Aid) Regulations 1981
- The Health and Safety Information for Employees Regulations 1989
- Employers' Liability (Compulsory Insurance) Act 1969
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR)

Assessment guidance

The unit covers the three main areas of Health and Safety responsibility you are likely to have in your job role. You are likely

to have had additional training and you may have been designated a 'competent person' in Health and Safety terms. For the purposes of this unit, you should carry out the tasks required according to the requirements of the relevant legislation and your own organisational procedures.

How do I demonstrate Knowledge?

Ideally you will have had some additional training for your enhanced role; if so, there may be good evidence in the form of formal tests and examinations – possibly even a recognised qualification. Remember that your evidence for this unit must be in the context of Information Technology, and you are only required to know about **relevant** legislation. The training you have done may be generic, so you must still show your assessor that you can relate that knowledge to your particular work environment. Professional discussion would be very useful to enable you to show the knowledge and understanding required.

How can I satisfy the skills and techniques part?

The tasks are self-explanatory – they must be substantial and complex. A simple gas test carried out at the entrance to a cable duct is not sufficiently complex. If, however you are asked to do a risk assessment of a multi-task installation covering perhaps underground cable work, building equipment racking and installing cabling and equipment at height, then that would be appropriate. Remember you need to consider not only what will be done, how and where, but also who will do it, their physical capabilities, knowledge and experience etc.

Monitoring compliance should be done in a formal way, keeping comprehensive records of findings, analysing results of audits and other monitoring, and taking or recommending corrective action.

The requirement for providing guidance to immediate colleagues means the passing on of substantial pieces of Health and Safety information and guidance relating to Information Technology work. This could be done in the form of special team briefings, or perhaps a written safety guide for a particular workplace with unusual Health and Safety issues.

Summary

Successful completion of this unit will recognise that you have the additional knowledge and skills not only to work safely as you are required to do by law, but that you can monitor and manage Health and Safety in your own local working environment. It also recognises your ability to communicate Health and Safety information and advice to colleagues.

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Develop personal and organisational effectiveness – levels 1, 2 and 3

This is improving effectiveness at work by the identification of:

- an individual's development needs and the activities needed to meet them
- potential improvements to the effectiveness of the organisation.

Typically this will involve:

- understanding the role of the individual, teams and the organisation
- obtaining and reviewing feedback from others on performance
- setting and agreeing personal goals and participating in development activities to meet them
- contributing to improvements within the organisation

This is a mandatory unit, which **must** be assessed in the workplace. You must be able to show that you can take a more proactive role in your personal and professional development, seeking out advice and solutions on your own initiative.

The competent person can:	This will involve applying knowledge and understanding of:	This will involve effective use of the following skills and techniques:
<p>Level 1</p> <p>Improve personal effectiveness at work under guidance.</p>	<ul style="list-style-type: none"> • participating in specified development activities • using feedback to improve own effectiveness • working as part of a team • identifying and reporting own working practices that could be improved. 	<ul style="list-style-type: none"> • how personal attributes impact own effectiveness at work • how feedback on own effectiveness and development needs can be obtained • own personal development plan • own role and responsibilities at work • own role in maintaining the organisation's brand or image • organisational aims and objectives relevant to own role.
<p>Level 2</p> <p>Develop personal effectiveness at work and contribute to improving working practices.</p>	<ul style="list-style-type: none"> • selecting and participating in relevant development activities • using feedback to improve own effectiveness • working as part of a team • identifying and reporting working practices that could be improved 	<ul style="list-style-type: none"> • how personal attributes impact own effectiveness at work • how feedback on own effectiveness and development needs can be obtained and assessed • own personal development plan • own, and immediate colleagues roles and responsibilities at work • own role in maintaining the organisation's brand or image • organisational aims and objectives relevant to self and immediate colleagues.
<p>Level 3</p> <p>Seek opportunities to develop personal and organisational effectiveness.</p>	<ul style="list-style-type: none"> • identifying and participating in relevant development activities • seeking opportunities to obtain feedback • using feedback to improve own effectiveness • working as part of a team • identifying and suggesting potential improvements to working practices. 	<ul style="list-style-type: none"> • how to obtain and assess feedback on personal attributes and effectiveness at work • how to identify own development needs and preferred learning styles • own personal development plan • roles and responsibilities at work • own role in promoting the organisation's brand or image • organisational aims and objectives.

Level 1 – Develop personal and organisational effectiveness 1

Skills and Techniques

For this unit you must demonstrate skills and techniques by providing evidence of at least **TWO** substantial instances of each of the following. The circumstances of each must be genuinely job-related and naturally occurring with a positive outcome that can be shown to have benefited you in your job.

1. Team working

Working effectively as part of a team.

- interacting with other members of the team in a positive manner;
- participating in team activities.

2. Development activities

These are activities that will improve an individual's and organisations capability to carry out the work.

- learning or training activities (e.g. courses, job shadowing, on the job coaching; open learning; seminars, workshops);
 - reading manuals or journals;
 - attending team meetings;
 - having training needs analysed.
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding in the context of your job in Information Technology:

1. Personal attributes

Characteristics and skills which can contribute to personal effectiveness at work. Different work roles will require different combinations of these attributes, applied at different levels of complexity.

- characteristics such as: adaptability; confidence; dependability; initiative; integrity; self-motivation; positive attitude; tolerance.
- skills such as: communication; creativity; leadership; negotiation and influencing; numeracy; planning; problem solving.

2. Feedback

This relates to the different ways that an individual can obtain feedback on their performance. Feedback procedures should include the frequency and source of feedback, how to validate that feedback is relevant and accurate and methods of assessing feedback.

- self assessment;
- formal and regular (e.g. customer surveys, service reports, appraisals by supervisors or managers, performance data);

- informal (e.g. verbally from colleagues or customers);
- team meetings.

Assessment Guidance

This is a mandatory unit that must be assessed in the workplace. It assesses skills that are essential to anyone wanting to be professional in the job that they do and to progress to other, more responsible and technically challenging jobs. You will need to work closely with your assessor and/or expert witness to gather evidence, which should all occur naturally as part of your normal work activities

How do I demonstrate Knowledge?

Some of the knowledge will be acquired and assessed during induction and refresher training – you may have taken some tests that could provide evidence. Professional discussion is very useful here – it will allow your assessor to cover most of the knowledge requirement in a relatively short time. Knowledge that you demonstrate while you are working can then be added, giving a comprehensive picture of what you know and how you can apply it.

How can I satisfy the skills and techniques part?

The skills and techniques required in this unit are, or should be, part of everyone's normal activities at work. One thing to remember is that '**selecting and participating in relevant development activities**' must be done on your own initiative. The fact that your manager has told you that you are going on a course without any input from you only covers the 'participating in' part. To satisfy the rest of the requirement, you **must** show that you can consider a number of training options and select the most appropriate one. For instance, you might need to learn about some new IT equipment that you will be working with. You might be given choices like 'read the manual and sit a written exam'; work through a computer based training package and tests in your own time' and 'attend a 3-day training course at the manufacturer's premises'. You must be able to show that you can select the most appropriate option, taking into account your own needs and those of your job.

Working with others, as part of a team is an important skill to develop – you will need to actively take part in team or group activities, making positive contributions to the tasks in hand. It might be useful to make some written record of how you did this, to use as supporting evidence. You could also use statements from other team members that confirm specific things that you did to contribute.

The remaining skills and techniques should be assessed using job-related evidence gained from observations and documentary evidence e.g. from annual appraisals, promotion reviews etc.

Summary

Successful completion of this mandatory unit will demonstrate that you have the skills to work well with others in the workplace and take responsibility for your own progression in your job role.

Level 2 – Develop personal and organisational effectiveness 2

Skills and Techniques

For this unit you must demonstrate skills and techniques by providing evidence of at least **TWO** substantial instances of each of the following. The circumstances of each must be genuinely job-related and naturally occurring with a positive outcome that can be shown to have benefited you in your job.

- 1. Selecting and participating in relevant development activities** eg:
 - learning or training activities (e.g. courses, job shadowing, on the job coaching; open learning; seminars, workshops)
 - reading manuals or journals
 - attending team meetings
 - having training needs analysed.
- 2. Using feedback to improve own effectiveness** eg:
 - self assessment
 - formal and regular (e.g. customer surveys, service reports, appraisals by supervisors or managers, performance data)
 - informal (e.g. verbally from colleagues or customers)
 - team meetings.
- 3. Working as part of a team during normal work activities** eg:
 - communicating effectively in a team setting
 - contributing to team activities
- 4. Identifying and reporting working practices that could be improved.**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job in Information Technology**:

1. How personal attributes impact own effectiveness at work

Personal attributes are characteristics and skills which can contribute to personal effectiveness at work. Different work roles will require different combinations of these attributes, applied at different levels of complexity eg:

- characteristics such as: adaptability; confidence; dependability; initiative; integrity; self-motivation; positive attitude; tolerance

- skills such as: communication; creativity; leadership; negotiation and influencing; numeracy; planning; problem solving.

2. How feedback on own effectiveness and development needs can be obtained and assessed

Feedback relates to the different ways that an individual can obtain feedback on their performance. Feedback procedures should include the frequency and source of feedback, how to validate that feedback is relevant and accurate, and methods of assessing feedback eg:

- self assessment
- formal and regular (e.g. customer surveys, service reports)
- appraisals by supervisors or managers, performance data)
- informal (e.g. verbally from colleagues or customers)
- team meetings.

3. Own personal development plan

How an individual can source information about their development options and then put together a plan to develop in their current job role and to equip themselves for future job roles

4. Own, and immediate colleagues' roles and responsibilities at work

5. Own role in maintaining the organisation's brand or image

6. Organisational aims and objectives relevant to self and immediate colleagues

Assessment Guidance

This is a mandatory unit that must be assessed in the workplace. It assesses skills that are essential to anyone wanting to be professional in the job that they do and to progress to other, more responsible and technically challenging jobs. You will need to work closely with your assessor and/or expert witness to gather evidence, which should all occur naturally as part of your normal work activities

How do I demonstrate Knowledge?

Some of the knowledge will be acquired and assessed during induction and refresher training – you may have taken some tests that could provide evidence. Professional discussion is very useful here – it will allow your assessor to cover most of the knowledge requirement in a relatively short time. Knowledge that you demonstrate while you are working can then be added, giving a comprehensive picture of what you know and how you can apply it.

How can I satisfy the skills and techniques part?

The skills and techniques required in this unit are, or should be, part of everyone's normal activities at work. One thing to remember is that **'selecting and participating in relevant development activities'** must be done on your own initiative. The fact that your manager has told you that you are going on a course without any input from you only covers the 'participating in' part. To satisfy the rest of the requirement, you **must** show that you can consider a number of training options and select the most appropriate one. For instance, you might need to learn about some new IT equipment that you will be working with. You might be given choices like 'read the manual and sit a written exam'; work through a computer based training package and tests in your own time' and 'attend a 3-day training course at the manufacturer's premises'. You must be able to show that you can select the most appropriate option, taking into account your own needs and those of your job.

Working with others, as part of a team is an important skill to develop – you will need to actively take part in team or group activities, making positive contributions to the tasks in hand. It might be useful to make some written record of how you did this, to use as supporting evidence. You could also use statements from other team members that confirm specific things that you did to contribute.

The remaining skills and techniques should be assessed using job-related evidence gained from observations and documentary evidence e.g. from annual appraisals, promotion reviews etc.

Summary

Successful completion of this mandatory unit will demonstrate that you have the skills to work well with others in the workplace and take responsibility for your own progression in your job role.

Level 3 – Develop personal and organisational effectiveness 3

Skills and Techniques

For this unit you must demonstrate skills and techniques by providing evidence of at least **THREE** substantial instances of each of the following. The circumstances of each must be genuinely job-related and naturally occurring with a positive outcome that can be shown to have benefited you in your job, and/or to have enhanced the performance of you and your immediate colleagues.

- 1. Identifying and participating in relevant development activities, being pro-active in their sourcing and selection** eg:
 - learning or training activities (e.g. courses, job shadowing, on the job coaching; open learning; seminars, workshops)
 - reading manuals or journals
 - attending team meetings
 - having training needs analysed
 - attending events (e.g. product briefings, trade shows or conferences)
- 2. Using feedback to improve own effectiveness** eg:
 - from colleagues at the same level (peers)
 - from superiors (eg: team leader, line manager etc)
 - from outside sources (eg: trainers, customers etc)
- 3. Seeking opportunities to obtain feedback**
- 4. Working as part of a team during normal work activities** eg:
 - communicating effectively in a team setting
 - contributing to team activities
- 5. Identifying and suggesting potential improvements to working practices**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job in Information Technology**:

- 1. How personal attributes impact own effectiveness at work**

Personal attributes are characteristics and skills, which can contribute to personal effectiveness at work. Different work roles will require different combinations of these attributes, applied at different levels of complexity eg:

- characteristics such as: adaptability; confidence; dependability; initiative; integrity; self-motivation; positive attitude; tolerance
- skills such as: communication; creativity; leadership; negotiation and influencing; numeracy; planning; problem solving.

2. How to obtain and assess feedback on personal attributes and effectiveness at work

Feedback relates to the different ways that an individual can obtain feedback on their performance. Feedback procedures should include the frequency and source of feedback, how to validate that feedback is relevant and accurate, and methods of assessing feedback eg:

- self assessment
- formal and regular (e.g. customer surveys, service reports)
- appraisals by supervisors or managers, performance data)
- informal (e.g. verbally from colleagues or customers)
- team meetings
- appraisal techniques (e.g. 360 degree appraisals; psychometric testing)

3. How to identify own development needs and preferred learning styles eg:

- analysis of current job role
- measurement of effectiveness in current job role
- gap analysis to identify training needs
- psychometric and other testing to identify preferred learning styles
- identifying past learning experiences that were most effective

4. Own personal development plan

How an individual can source information about their development options and then put together a plan to develop in their current job role and to equip themselves for future job roles eg:

- knowledge of job roles within the organisation
- knowledge of job roles within own industry
- knowledge of required and desirable training and qualifications for different job roles

5. Roles and responsibilities at work eg: throughout the organisation

6. Own role in maintaining and promoting the organisation's brand or image eg: by contact with existing, new or prospective customers

7. Organisational aims and objectives - an overall view of eg:

- corporate mission statement and business strategy
- marketing
- policy towards existing customers

Assessment Guidance

This is a mandatory unit that must be assessed in the workplace. It assesses skills that are essential to anyone wanting to be professional in the job that they do and to progress to other, more responsible and technically challenging jobs. You will need to work closely with your assessor and/or expert witness to gather evidence, which should all occur naturally as part of your normal work activities. As you will be more experienced in the workplace than some of your more junior colleagues, you are expected to take a much more proactive role in seeking advice, guidance and opportunities to develop your skills and knowledge.

How do I demonstrate Knowledge?

Some of the knowledge will be shown during induction and refresher training – you may have taken some assessment tests that could provide evidence. You may also have contributed to the development of other, more junior colleagues. Professional discussion is very useful here – it will allow your assessor to cover most of the knowledge requirement in a relatively short time. Knowledge that you demonstrate while you are working can then be added, giving a comprehensive picture of what you know and how you can apply it.

How can I satisfy the skills and techniques part?

The skills and techniques required in this unit are, or should be, part of everyone's normal activities at work. One thing to remember is that '**selecting and participating in relevant development activities**' must be done on your own initiative. The fact that your manager has told you that you are going on a course without any input from you only covers the 'participating in' part. To satisfy the rest of the requirement, you **must** show that you can identify a number of training options and select the most appropriate one. For instance, you might need to learn about some new IT equipment or software that you will be working with. You might discover choices like 'read the manual and sit a written exam'; 'work through a computer based training package and tests in your own time' and 'attend a 3-day training course at the manufacturer's premises'. You must be able to show that you can select the most appropriate option, taking into account your own needs and those of your job. You might also have been asked to represent your department or team at a conference, training seminar or a trade event.

The remaining skills and techniques should be assessed using job-related evidence gained from observations and documentary evidence e.g. from annual appraisals, promotion reviews etc. You should demonstrate skills and techniques for this unit in a much more pro-active way than would normally be expected of more junior colleague. In other words, you should actively seek out advice, opportunities and information rather than let them come to you.

Summary

Successful completion of this mandatory unit will demonstrate that you have the skills to work well with others in the workplace and take responsibility for your own progression in your job role. It will show an ability to find out information for yourself and to take steps on your own initiative to improve your value to yourself and your employer.

Customer Care – levels 1, 2 and 3

This is the identification of, and response to, customer needs to ensure customer satisfaction.

Typically this will involve:

- The maintenance of a successful balance between customer needs and the needs of the organisation
- The monitoring of customer satisfaction through the use of formal and informal assessment techniques (e.g. surveys, feedback etc.)
- The handling and resolution of customer issues and complaints in a constructive manner that ensures customer satisfaction

You are likely to be in a role where you will have regular direct contact with customers either in person or by way of remote communication means such as telephone, Internet or conventional mail.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Provide customer care in a familiar context.</p>	<ul style="list-style-type: none"> • complying with organisational requirements • communicating interpersonally on a familiar subject in a familiar work situation • providing customer interaction • providing service delivery • gathering specified customer satisfaction information. 	<ul style="list-style-type: none"> • simple uses of interpersonal communication techniques • specified parts of the organisational requirements for customer care • specified methods of measuring customer satisfaction levels.
<p>Level 2 Provide customer care by establishing customer relationships.</p>	<ul style="list-style-type: none"> • complying with organisational requirements • communicating interpersonally on familiar subjects • providing customer interaction • providing service delivery and handling complaints • gathering relevant customer satisfaction information. 	<ul style="list-style-type: none"> • uses of interpersonal communication techniques • relevant parts of the organisational requirements for customer care • what are the implications of customer satisfaction • relevant methods of measuring customer satisfaction levels
<p>Level 3 Provide customer care by developing customer relationships and contribute to improving the delivery of service.</p>	<ul style="list-style-type: none"> • monitoring compliance with organisational requirements for customer support. • communicating interpersonally with customers • providing customer interaction • providing service delivery and handling complaints • gathering customer satisfaction information • analysing and reporting specified customer satisfaction information. 	<ul style="list-style-type: none"> • uses of interpersonal communication techniques • the organisational requirements for customer care • what are the implications of customer satisfaction • methods of measuring customer satisfaction levels.

Level 1 – Customer Care 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **TWO** straightforward but different customer care tasks that are typical of your job in Information Technology:

- 1. Complying with organisational requirements**
- 2. Communicating interpersonally** - on a familiar subject in a familiar work situation, using interpersonal communication techniques eg:
 - following organisational guidelines and procedures
- 3. Providing service delivery** - identification and resolution of service delivery issues
 - recognising own limitations
 - escalating customer issues following organisational requirements
- 4. Providing customer interaction** - working in a positive and professional way with the customer
 - focusing on addressing customer needs
 - interacting in a sensitive and helpful manner with the customer
- 5. Gathering specified customer satisfaction information**
e.g. using:
 - pre-prepared feedback forms
 - standard verbal scripts

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Simple uses of interpersonal communication techniques**, which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link):
 - verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
 - attentive listening (i.e. difference between hearing and listening)
 - positive and negative language
- 2. Specified parts of the organisational requirements** for customer care eg:
 - customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)

- authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
- escalation, resolution and complaint handling;
- quality assurance procedures
- compliance with relevant legislation and regulations (e.g. data protection, financial services)
- maintenance and communication of organisational brand or image
- organisational aims and objectives

3. Specified methods of measuring customer satisfaction levels (The monitoring of customer satisfaction through the use of formal assessment techniques) eg:

- predefined formal feedback using standard written forms or verbal scripts

Assessment Guidance

At Level 1 this unit is about your basic customer care skills – how you communicate with them face-to-face, on the telephone or by any other means. You will need to provide evidence of at least two customer care tasks that are different enough to provide good coverage of all aspects of your job role. Tasks could include, for example, answering a customer query on the technical specification of a piece of equipment, or perhaps taking details of a reported fault and advising the customer of action to be taken. You are very likely to have been given some sort of a script and some relevant information to use during your contact with the customers, together with clear instructions as to how to escalate problems and to whom.

How do I demonstrate Knowledge?

In this kind of job role, you would not normally be allowed to interact with customers until you had received training in procedures and techniques. As part of that training, you will have gained much of the knowledge required for this unit, and you might well have had to pass some knowledge and procedural tests. These will be a good starting point for assessment, together with the knowledge you demonstrate during the normal course of your work. Remaining gaps can be filled in by oral or written questions.

How can I satisfy the skills and techniques part?

Assessment should normally be carried out either in the workplace. The sum of the tasks must cover all of the skills and techniques listed – some can be assessed in an approved realistic working environment if they do not form part of your everyday job role.

Summary

This unit is an important one for anyone whose job involves dealing direct with customers; because it is here that many businesses will stand or fall. Successful completion of this unit is proof that you can work effectively in a customer-facing role and have an appreciation of the importance of customer service to the organisation.

Level 2 – Customer Care 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **TWO** comprehensive and different customer care tasks that are typical of your job in Information Technology:

- 1. Complying with organisational aims and objectives**
- 2. Communicating interpersonally** - using interpersonal communication techniques eg:
 - following organisational guidelines and procedures
 - modulating voice when speaking to suit the listener or audience
 - articulating and expressing ideas clearly and concisely
 - listening actively (e.g. by taking notes)
 - clarifying and confirming understanding (e.g. by paraphrasing or repetition).
 - responding to questions with accurate information
 - ensuring content is appropriate to the needs of the audience
 - identifying and avoiding listening barriers
 - maintaining focus on the purpose of the communication
- 3. Service delivery** - identification and resolution of service delivery issues
 - recognising own limitations
 - escalating customer issues following organisational requirements
 - meeting own commitments to customers
 - following up customer problems and issues
- 4. Customer interaction** - working in a positive and professional way with the customer
 - focusing on addressing customer needs
 - interacting in a sensitive and helpful manner with the customer
 - responding to customer requests on time, accurately, pleasantly and professionally
 - building a trusting relationship with the customer
 - keeping self and customer focused
 - maintaining consistent communication style
- 5. Complaint handling** - the handling and resolution of customer issues in a constructive manner that ensures customers satisfaction
 - using probing questions

- displaying patience and understanding with demanding or emotional customers

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Uses of interpersonal communication techniques**, which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link):
 - verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
 - attentive listening (i.e. difference between hearing and listening)
 - positive and negative language active listening (e.g. summarising, paraphrasing, body language)
 - listening barriers (e.g. background noise, distractions, lack of concentration);
 - types of question (e.g. open, closed and probing)

- 2. Relevant parts of the organisational requirements** for customer care eg:
 - customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)
 - authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
 - escalation, resolution and complaint handling;
 - quality assurance procedures
 - compliance with relevant legislation and regulations (e.g. data protection, financial services)
 - maintenance and communication of organisational brand or image
 - organisational aims and objectives

- 3. The implications of customer satisfaction.** Customer satisfaction levels can have implications for the organisation. These can include both positive and negative effects for:
 - customer retention
 - working relationships

- 4. Relevant methods of measuring customer satisfaction levels** (The monitoring of customer satisfaction through the use of formal and informal assessment techniques) eg:
 - predefined formal feedback
 - unsolicited feedback
 - anecdotal feedback

Assessment Guidance

You will need to provide evidence of at least two customer care tasks that are different enough to provide good coverage of all aspects of your job role. Tasks could include, for example, answering a customer query on the technical specification of a piece of equipment, dealing with a customer complaint about service delivery or perhaps taking details of a reported fault and advising the customer of action to be taken.

How do I demonstrate Knowledge?

In this kind of job role, you would not normally be allowed to interact with customers until you had received training in procedures and techniques. As part of that training, you will have gained much of the knowledge required for this unit, and you might well have had to pass some knowledge and procedural tests. These will be a good starting point for assessment, together with the knowledge you demonstrate during the normal course of your work. Remaining gaps can be filled in by oral or written questions or in professional discussion.

How can I satisfy the skills and techniques part?

Assessment should normally be carried out either in the workplace or in an approved realistic working environment. The sum of the tasks must cover all of the skills and techniques listed – some can be assessed in an approved realistic working environment if they do not form part of your everyday job role. For instance, complaint handling is often classed as a specialist role to be done by a separate department, but you will often have to deal initially with complaints as the first point of contact. Of course, customer complaints usually come unannounced, so you should be prepared to take notes of what happened and to call an expert witness to observe you if necessary.

Summary

This unit is an important one for anyone whose job involves dealing direct with customers; because it is here that many businesses will stand or fall. Successful completion of this unit is proof that you can work effectively in a customer-facing role and have an appreciation of the importance of customer service to the organisation

Level 3 – Customer Care 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different customer care tasks that are typical of your job in Information Technology:

1. Monitoring compliance with organisational requirements for customer support e.g. by:

- participating in audits of working practices and monitoring of work
- gathering and recording information on customer support provision

2. Communicating interpersonally with customers- using interpersonal communication techniques eg:

- following organisational guidelines and procedures
- modulating voice when speaking to suit the listener or audience
- articulating and expressing ideas clearly and concisely
- listening actively (e.g. by taking notes)
- clarifying and confirming understanding (e.g. by paraphrasing or repetition).
- responding to questions with accurate information
- ensuring content is appropriate to the needs of the audience
- identifying and avoiding or reducing listening barriers
- maintaining focus on the purpose of the communication
- selecting appropriate communication styles
- adapting terminology and vocabulary to the needs of the audience
- differentiating between facts and feelings

3. Providing service delivery

Identification and resolution of service delivery issues

- recognising own limitations
- escalating customer issues following organisational requirements
- meeting own commitments to customers
- following up customer problems and issues
- identifying and reporting issues that could affect overall service delivery

4. Providing customer interaction

Working in a positive and professional way with the customer

- focusing on addressing customer needs
- interacting in a sensitive and helpful manner with the customer
- responding to customer requests on time, accurately, pleasantly and professionally
- building a trusting relationship with the customer
- keeping self and customer focused
- maintaining consistent communication style

- identifying and manage customer expectations
- working with customer to continuously improve customer satisfaction

5. Handling complaints

The handling and resolution of customer issues in a constructive manner that ensures customers satisfaction

- using probing questions
- displaying patience and understanding with demanding or emotional customers
- diffusing volatile situations using appropriate communication techniques
- delivering difficult messages to customers and explaining the reasons behind the decision
- assessing priority of complaints
- resolving routine complaints

6. Gathering customer satisfaction information e.g.:

- written customer surveys
- random telephone surveys
- exit polls
- call monitoring

7. Analysing and reporting specified customer satisfaction information.

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

1. Uses of interpersonal communication techniques, which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link):

- verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
- attentive listening (i.e. difference between hearing and listening)
- positive and negative language active listening (e.g. summarising, paraphrasing, body language)
- how to reduce listening barriers (e.g. background noise, distractions, lack of concentration)
- types of question (e.g. open, closed and probing)
- how to adapt style (e.g. intonation, inflexion, business or technical terminology and vocabulary) to audience needs;
- cultural differences

2. The organisational requirements for customer care e.g.: customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)

- authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
- escalation, resolution and complaint handling;

- quality assurance procedures
- compliance with relevant legislation and regulations (e.g. data protection, financial services)
- maintenance and communication of organisational brand or image
- organisational aims and objectives

3. The implications of customer satisfaction. Customer satisfaction levels can have implications for the organisation. These can include both positive and negative effects for:

- customer retention
- working relationships
- costs
- sales of products or services

4. Relevant methods of measuring customer satisfaction levels (The monitoring of customer satisfaction through the use of formal and informal assessment techniques) eg:

- predefined formal feedback
- unsolicited feedback
- anecdotal feedback
- customer research (e.g. event, periodic, one-time)
- customer retention

Assessment Guidance

In the three or more tasks you complete for this unit, you will need to show that you can work on your own initiative, within your own terms of reference. At least one of the tasks should be predominantly to do with complaint handling. In all the tasks you must show good communication skills and the ability to take action to preserve the balance between customer and business needs.

How do I demonstrate Knowledge?

While much of the knowledge evidence will come out in the practical tasks, you will probably need a professional discussion with your assessor to explore your understanding of the remaining items. Your assessor might also be able to use the results of some tests and/or exams you might have taken during the training for your current job.

How can I satisfy the skills and techniques part?

Assessment should be carried out either in the workplace or in a realistic working environment. The sum of the tasks must cover all of the skills and techniques listed – some can be assessed in a realistic working environment if they do not form part of your everyday job role. For instance, complaint handling is often classed as a specialist role to be done by a separate department, but you will often have to deal with complaints, perhaps escalated to you by more junior colleagues. Of course, customer complaints usually come unannounced, so you should be prepared to take notes of what happened and to call an expert witness to observe you if necessary.

Summary

This unit is an important one for anyone whose job involves dealing direct with customers; because it is here that many businesses will stand or fall. Successful completion of this unit is proof that you can work effectively in a more senior customer-facing role. It shows that you have a good appreciation of how to influence and measure customer satisfaction, and how important that is to your organisation.

Data analysis and data structure design – levels 2 and 3

This unit is about providing specialist expertise and practical assistance in modelling and rationalising data in order to ensure coherence, availability, accuracy and security. The data involved can be of any type (e.g. financial, scientific, personal etc.).

The area of competence also includes the designing of efficient structures to store the modelled data. The structures could be intended for use, for example, in software or database applications.

This is an optional unit, which should normally be assessed in the workplace but can be assessed in an approved realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 2</p> <p>Design data structures based on data models</p>	<ul style="list-style-type: none"> • selecting appropriate field types and attributes to represent the data items of data models • using meaningful names for all data structure components • estimating the data storage capacity requirements of data structures. 	<ul style="list-style-type: none"> • the field types and attributes available in the intended implementation method • organisational conventions for naming data structure components.
<p>Level 3</p> <p>Create data models and design data structures.</p>	<ul style="list-style-type: none"> • using data modelling techniques to construct logical data models • refining and rationalising logical data models • creating access rules or methods • validating models against needs and intended implementation environment • creating efficient data structures to represent logical data models • calculating the data storage capacity requirements of data structures. 	<ul style="list-style-type: none"> • the concepts of logical data modelling • considerations when validating models • field types and attributes • organisational conventions for naming data structure components.

Level 2 – Data analysis and data structure design 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **TWO** comprehensive and different tasks:

1. Selecting appropriate field types and attributes to represent the data items of data models
2. Using meaningful names for all data structure components
3. Estimating the data storage capacity requirements of data structures e.g.:
 - normal use
 - compressed
 - back-up

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

1. The field types and attributes available in the intended implementation method e.g.:

Field types such as:

- alphanumeric
- currency
- date
- logical
- integer
- number
- real number

Attributes such as:

- size
- range of acceptable values
- key
- required

2. Organisational conventions for naming data structure components

Assessment Guidance

The uses and types of data structure for the purposes of this unit are widely varied, e.g. web based structures, networked databases, spreadsheets – anything that allows the storage of and access to data can be used, so long as it allows you to select

field types and attributes and to select names for each of the data structure components.

How do I demonstrate Knowledge?

The knowledge requirement is directly related to two things:

- the particular application or data structure you intend to use for the task
- the conventions of your particular organisation, or the organisation who will use the data structure, for naming components of data structures

This will become clear as part of your assessment tasks, but your assessor might want to confirm your understanding of those items during a discussion or by a series of questions.

How can I satisfy the skills and techniques part?

Assessment should normally be carried out either in the workplace or in an approved realistic working environment. The tasks should be different in content and together should cover all of the criteria detailed above. You might, for instance, be designing a data structure for a website to enable users and others to input and extract data, or you might be designing a network-based information system for colleagues to enable easy access to product information. The important thing to remember is that the demonstration of an un-connected set of skills and techniques is not acceptable.

Summary

Successful completion of this unit recognises your ability to present data in such a way that it can be accessed and used easily and accurately, using an established data structure. This is an important skill, particularly in an organisation that depends upon the gathering, organising and use of large amounts of data in a variety of ways.

Level 3 – Data analysis and data structure design 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **TWO** substantial and complex tasks:

- 1. Constructing logical data models using data modelling techniques** e.g.:
 - identifying and naming entities and relationships
 - representing entity relationships;
 - normalisation;
 - identifying entities which will be accessed for enquiry and/or update;
 - identifying access sequences and triggers
 - producing data dictionaries
- 2. Refining and rationalising logical data models**
- 3. Creating access rules or methods**
- 4. Validating models against needs and intended implementation environment**
- 5. Creating efficient data structures to represent logical data models**
- 6. Calculating the data storage capacity requirements of data structures**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The concepts of logical data modelling** - Concepts which underpin the process of logical data modelling:
 - entities
 - relationships between entities
 - attributes of entities
 - data normalisation
 - keys/indexes
 - notations and conventions for data modelling (e.g. SSADM4+)
- 2. Considerations when validating models.** Validation of the data model against:
 - customer/client requirements;
 - entry points, access paths and navigation

- data and access volumes
3. **Field types and attributes.** The following are generic examples of field types and attributes. Knowledge of the specific types and attributes used by the actual implementation method is required:
 4. **Standard field types** such as:
 - alphanumeric
 - currency
 - date
 - logical
 - integer number
 - real number
 5. **Field types for extended data** such as:
 - memos
 - embedded objects
 - lookup tables
 6. **Standard attributes** such as:
 - size
 - range of acceptable values
 - key
 - required
 7. **Attributes for controlling data entry** such as:
 - format
 - validation rules
 8. Organisational conventions for naming data structure components
-

Assessment Guidance

The assessment tasks required for this unit are need to be substantial and complex and therefore the minimum is set at **TWO**. These need to be complete tasks dealing with large amounts of data, starting with a clearly defined requirement for modelling and rationalising a set of data and finishing with an efficient, usable data structure that accurately represents that model.

How do I demonstrate Knowledge?

The knowledge and understanding requires you to have a thorough grasp of the principles and concepts of data modelling, and of the processes involved in converting that model to a data structure. In completing the assessment tasks, you should be able to describe every step in the process and explain the reason for it. This could be done by professional discussion with your assessor, or you could, perhaps write a detailed report on each task and then discuss it with your assessor. Some of the knowledge items might contain elements of local procedures and methods, but the general principles should be common to most situations

How can I satisfy the skills and techniques part?

Assessment should normally be carried out either in the workplace or in an approved realistic working environment. The tasks should be different in content and together should cover all of the criteria detailed above. You might, for instance, be designing a data structure for a website to enable users and others to input and extract data, or you might be designing a network-based information system for colleagues to enable easy access to product information. The important thing to remember is that the demonstration of an un-connected set of skills and techniques is not acceptable. You should start with a requirement, produce a refined data model and finish with an efficient data structure to represent that model. If the structure works, but is grossly inefficient, then you will not have satisfied the skills and techniques requirements. You should properly document each stage.

The calculation of the data storage capacity figures should be done using standard techniques and should be reasonably accurate

Summary

Successful completion of this unit recognises your ability to model and present data in an efficient structure so that it can be accessed and used easily and accurately. This is an important skill, particularly in an organisation that depends upon the gathering, organising and use of large amounts of data in a variety of ways.

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Interpersonal and written communication – levels 1, 2 and 3

This is the ability to communicate using language and terminology that is appropriate to the audience. This involves both receiving (e.g. lip-reading, listening and reading) and sending or giving (e.g. signing, speaking, presenting and writing) information.

Typically this will involve:

- establishment of rapport with individuals through active listening
- composition of written material (e.g. documentation, e-mails, faxes, letters or presentations);
- successful interaction with individuals and groups

You are likely to be in a job role where you need to be able to communicate directly (interpersonally) or indirectly (eg in writing with other people in a clear and professional way. This is an optional unit, which can be assessed either in the workplace or in a realistic working environment, but evidence must be in the context of Information Technology.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1</p> <p>Communicate simple information in a familiar context.</p>	<ul style="list-style-type: none"> • communicating interpersonally on a familiar subject in a familiar work situation • communicating in writing on familiar subjects using specified formats 	<ul style="list-style-type: none"> • simple uses of interpersonal and written communication techniques
<p>Level 2</p> <p>Communicate information in familiar contexts</p>	<ul style="list-style-type: none"> • send and receive familiar information by communicating interpersonally in familiar work situations • send and receive familiar information by communicating in writing using relevant formats 	<ul style="list-style-type: none"> • relevant uses of interpersonal and written communication techniques
<p>Level 3</p> <p>Communicate complex information in a range of familiar contexts.</p>	<ul style="list-style-type: none"> • send and receive complex information by communicating interpersonally • send and receive complex information by communicating in writing • providing guidance to immediate colleagues on how to communicate information. 	<ul style="list-style-type: none"> • relevant uses of interpersonal and written communication techniques

Level 1 – Interpersonal and written communication 1

Skills and Techniques

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit, **in the context of your job role**, in other words the content and situations under which evidence is produced must be relevant to Information Technology

1. Send and receive familiar information by communicating interpersonally in familiar work situations

- following organisational guidelines and procedures.

2. Send and receive familiar information by communicating in writing using specified formats

- following organisational guidelines and procedures
 - identifying and conveying key messages in writing (e.g. letter, fax, email, database notes)
 - using correct grammar and spelling
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job role**, in other words the content and situations under which evidence is produced must be relevant to Information Technology:

1. Simple uses of communication techniques:

- a **Interpersonal** - These are techniques which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link) eg:
 - verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
 - attentive listening (i.e. difference between hearing and listening).
 - positive and negative language
- b **Written** - writing techniques which can be used to suit the needs of different audiences eg:
 - grammar, spelling

Assessment Guidance

The two or more straightforward tasks that you produce should cover both written and interpersonal skills and be in the context of Information Technology

How do I demonstrate Knowledge?

Much of the knowledge evidence will be demonstrated during the normal work that you do. However, your assessor or expert witness might want to explore the less obvious ones such as signing, lip reading etc. where they are required in your job role.

How can I satisfy the skills and techniques part?

The written tasks should contain relevant information and be presented in a professional way. You should be careful to use the correct technical terminology, good grammar and punctuation and spelling should be carefully checked. You should beware of using unusual abbreviations and 'text-message language' – the communication must be clear, unambiguous and easily understood by all the intended audience. You should also show that you can correctly interpret and respond to communication from others. This could be perhaps be done by requesting some technical information from a manufacturer on behalf of a customer, using a set format, and then interpreting and simplifying the information received before passing it on to the customer. This would involve identifying the key facts from the received information and perhaps getting the information checked.

Similarly, the process of obtaining, interpreting and passing on information can be done verbally. The likely preferred assessment method will be observation by your assessor and/or evidence from an expert witness in the workplace who will be much better able to respond to assessment opportunities

Summary

The ability to communicate well in the workplace is an essential skill, which can greatly enhance the effectiveness of an individual in their job role. Successful completion of this unit recognises that ability and serves to enhance the other units within the qualification.

Level 2 – Interpersonal and written communication 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit, **in the context of your job role**, in other words the content and situations under which evidence is produced must be relevant to Information Technology

1. Send and receive familiar information by communicating interpersonally in familiar work situations

- following organisational guidelines and procedures.
- modulating voice when speaking to suit the listener or audience
- articulating and expressing ideas clearly and concisely
- listening actively (e.g. by taking notes)
- clarifying and confirming understanding (e.g. by paraphrasing or repetition).
- responding to questions with accurate information
- ensuring content is appropriate to the needs of the audience
- identifying and avoiding listening barriers
- maintaining focus on the purpose of the communication

2. Send and receive familiar information by communicating in writing using relevant formats

- following organisational guidelines and procedures
- identifying and conveying key messages in writing (e.g. letter, fax, email, database notes)
- using correct grammar and spelling
- using and understanding appropriate business or technical terminology
- ensuring content, format and style are appropriate to the audience and channel (e.g. letter, memo, fax, e-mail, web chat)
- structuring writing into a logical framework
- conveying ideas and information in a clear and concise manner
- identifying relevant information in written communications
- reviewing or proof reading own written work

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job role**, in other words

the content and situations under which evidence is produced must be relevant to Information Technology:

1. Relevant uses of communication techniques:

- a **Interpersonal** - These are techniques which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link) eg:
 - verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
 - attentive listening (i.e. difference between hearing and listening).
 - positive and negative language
 - active listening (e.g. summarising, paraphrasing, body language);
 - listening barriers (e.g. background noise, distractions, lack of concentration);
 - types of question (e.g. open, closed and probing)
- b **Written** - writing techniques which can be used to suit the needs of different audiences eg:
 - grammar, spelling.
 - business or technical terminology
 - format and style for different communication channels (e.g. letter, memo, e-mail and fax)

Assessment Guidance

The two or more comprehensive tasks that you produce should cover both written and verbal skills and be in the context of Information Technology

How do I demonstrate Knowledge?

Much of the knowledge evidence will be demonstrated during the normal work that you do. However, your assessor or expert witness might want to explore the less obvious ones, such as listening barriers and types of question, in a professional discussion.

How can I satisfy the skills and techniques part?

The written tasks should contain relevant information and be presented in a professional way. You should be careful to use the correct technical terminology, good grammar and punctuation and spelling should be carefully checked. You should beware of using obscure abbreviations and 'text-message language' – the communication must be clear, unambiguous and easily understood by all the intended audience. You should also show that you can correctly interpret and respond to communication from others. This could be perhaps be done by requesting some technical information from a manufacturer on behalf of a customer, interpreting and simplifying the information received and then passing it on to the customer.

Similarly, the process of obtaining, interpreting and passing on information can be done verbally. The likely preferred assessment method will be observation by your assessor and/or evidence from an expert witness in the workplace who will be much better able to respond to assessment opportunities

Summary

The ability to communicate well in the workplace is an essential skill, which can greatly enhance the effectiveness of an individual in their job role. Successful completion of this unit recognises that ability and serves to enhance the other units within the qualification.

Level 3 – Interpersonal and written communication 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills and techniques outlined in the unit, **in the context of your job role**.

1. Send and receive complex information by communicating interpersonally

- following organisational guidelines and procedures.
- modulating voice when speaking to suit the listener or audience
- articulating and expressing ideas clearly and concisely
- listening actively (e.g. by taking notes)
- clarifying and confirming understanding (e.g. by paraphrasing or repetition)
- responding to questions with accurate information
- ensuring content is appropriate to the needs of the audience
- identifying and avoiding or reducing listening barriers
- maintaining focus on the purpose of the communication
- selecting appropriate communication styles
- adapting terminology and vocabulary to the needs of the audience
- differentiating between facts and feelings

2. Send and receive complex information by communicating in writing

- following organisational guidelines and procedures
- identifying and conveying key messages in writing (e.g. letter, fax, email, database notes)
- using correct grammar and spelling
- using and understanding appropriate business or technical terminology
- ensuring content, format and style are appropriate to the audience and channel (e.g. letter, memo, fax, e-mail, web chat)
- structuring writing into a logical framework
- conveying ideas and information in a clear and concise manner
- identifying relevant information in written communications
- reviewing or proof reading own written work
- developing messages that convey alternative viewpoints;
- extracting key messages from written correspondence;
- reviewing and editing documents created by others

3. Providing guidance to immediate colleagues on how to communicate information

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job role**, in other words the content and situations under which evidence is produced must be relevant to Information Technology:

1. Relevant uses of communication techniques:

- a **Interpersonal** - These are techniques which can be used to suit the needs of different audiences when communicating directly (e.g. face to face, or by telephone or video link) eg:
 - verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).
 - attentive listening (i.e. difference between hearing and listening).
 - positive and negative language. active listening (e.g. summarising, paraphrasing, body language);
 - how to recognise and reduce listening barriers (e.g. background noise, distractions, lack of concentration);
 - types of question (e.g. open, closed and probing) how to adapt style (e.g. intonation, inflexion, business or technical terminology and vocabulary) to audience needs;
 - cultural differences
- b **Written** - writing techniques that can be used to suit the needs of different audiences eg:
 - grammar, spelling.
 - business or technical terminology
 - format and style for different communication channels (e.g. letter, memo, e-mail and fax)
 - structuring written material (e.g. paragraphs, headings, vocabulary, sentence length etc.) to meet audience needs.

Assessment Guidance

The three more substantial and complex tasks that you produce should cover both written and verbal skills and be in the context of Information Technology

How do I demonstrate Knowledge?

Much of the knowledge evidence will be demonstrated during the normal work that you do. However, your assessor or expert witness might want to explore the less obvious ones, such as

listening barriers and types of question, in a professional discussion.

How can I satisfy the skills and techniques part?

The written tasks could be in the form of a technical report following a system audit, system test, site survey, system failure etc. They should contain relevant information and be presented in a professional way. You should be careful to use the correct technical terminology, good grammar and punctuation and spelling should be carefully checked. You should beware of using obscure abbreviations and 'text-message language' – the communication must be clear, unambiguous and easily understood by all the intended audience. You should also show that you can correctly interpret and respond to communication from others. This could be perhaps be done by requesting some complex technical information from a manufacturer on behalf of a customer, interpreting and simplifying the information received and then passing it on in writing to the customer. You also need to show that you can review and edit other peoples' work and explain the changes to them.

Similarly, the process of obtaining, interpreting and passing on information can be done verbally. The likely preferred assessment method will be observation by your assessor and/or evidence from an expert witness in the workplace who will be much better able to respond to assessment opportunities. You could perhaps use a presentation made to a team meeting, to managers, customers or to colleagues from elsewhere in your organisation. You might perhaps have been asked to host a visit to your workplace by people unfamiliar with the technology or the circumstances under which it is being used. These are all opportunities for assessment of your verbal communication skills.

Summary

The ability to communicate well in the workplace is an essential skill, which can greatly enhance the effectiveness of an individual in their job role. This unit at level 3 requires that you go a step further than the normal, everyday work communications and produce work that substantial and complex in content, presented in an appropriately professional way. Successful completion of this unit recognises that ability and serves to enhance the other units within the qualification.

Investigating and defining requirements – levels 2 and 3

Successful system development needs to start from an agreed, comprehensive requirements definition. The requirements definition sets out the customer's requirements for the system. It is often a formal contract or agreement between customer and system developer. It can also provide metrics to assess the performance of the implemented system.

This unit is about creating requirements definitions and the investigation and analysis of information on which they are based. A system can be any combination of equipment, hardware and software. System development likewise can cover a range of activity types such as the creation of software and networks and the installation of hardware, equipment or cabling.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 2 Obtain and analyse information under direction.</p>	<ul style="list-style-type: none"> • using specified investigative methods effectively • analysing information to identify specified needs and constraints • clearly recording the results of analyses in an agreed format • preserving the confidentiality of client/customer information. 	<ul style="list-style-type: none"> • specified client/customer needs and constraints to be identified • defects which can arise in information.
<p>Level 3 Obtain and analyse client/customer information to identify system requirements.</p>	<ul style="list-style-type: none"> • using a range of investigative methods effectively • analysing information to identify relevant needs and constraints • prioritising client/customer needs • producing requirements definitions • clearly recording the results of analyses to agreed formats • checking identified needs, constraints and priorities with client/customer • preserving the confidentiality of client/customer information. 	<ul style="list-style-type: none"> • relevant client/customer needs and constraints • defects which can arise in information.

Level 2 – Investigating and defining requirements 2

Skills and Techniques

For this unit you must demonstrate skills and techniques by providing evidence of at least **TWO** substantial instances of each of the following. The circumstances of each must be genuinely job-related and naturally occurring with a positive outcome that can be shown to have benefited you in your job.

1. **Using specified investigative methods effectively** i.e. methods of eliciting the information required to identify customer needs and constraints.
 - carrying out observations (e.g. of manual processes)
 - examination of existing documents, records or software
 - participating in site surveys
 2. **Analysing information to identify specified needs and constraints** (see Knowledge 1.)
 3. **Clearly recording the results of analyses in an agreed format**
 4. **Preserving the confidentiality of client/customer information**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job in Information Technology**:

1. **Specified client/customer needs and constraints to be identified** e.g.:
 - a Needs - the current and anticipated needs of the client/customer for which a system is to be developed:
 - data;
 - functionality (e.g. inputs, processes and outputs)
 - capacity (e.g. numbers of users, throughput, data storage)
 - b Constraints with which the system to be developed must conform. These may be imposed for example by the client/customer (either explicitly or implicitly) or the environment in which the system will operate.

This list is not exhaustive nor will all examples be applicable in all contexts.

- compatibility with existing systems;
- physical environment (e.g. availability of power supplies, locations, ventilation etc.)

2. Types of defects which can arise when information is collected e.g.:

- inaccuracies;
 - duplications;
 - omissions.
-

Assessment Guidance

You will need to produce at least **TWO** complete tasks, demonstrating skills, techniques and knowledge outlined above. The assessment of a series of unconnected skills is not acceptable.

How do I demonstrate Knowledge?

The knowledge evidence for requirement 1 – Specified client/customer needs – must be assessed separately for **each** of the assessment tasks. The knowledge must therefore be directly related to the task being assessed. Requirement 2 – information defects – need only be assessed once, except that if a particular task carries an unusually high risk regarding the quality or availability of information, then you should show that you are aware of the risk and that you are taking steps to minimise it. The knowledge evidence can be assessed in discussion with your assessor, by specific questioning or by reference to the documents that you produce.

How can I satisfy the skills and techniques part?

The tasks you carry out for this unit must start with a specific request for a customer's requirements to be investigated and defined. You will have been given specific directions as to how this is to be done. You might, for instance be asked to survey a customer's premises to establish suitability for broadband Internet connection, or for a wireless network. You should correctly use all of the investigative techniques required – for instance you might have been given specialist test equipment to use, or you might be asked to survey system users using a script or pre-defined questionnaire. You are likely to be part of a survey team if the requirement is substantial, but you could be working on your own for smaller ones.

Analysis of collected data should be carried out using specified methods and you should be able to explain and justify any findings to your assessor. You should also show that you are accurately recording the findings in the way that your organisation requires and you should show your assessor the steps you are taking to preserve customer/client confidentiality.

Summary

The successful completion of this unit recognises your skill in being able to participate in the process of defining the requirements for systems – this is the first, vital step to successful system design and installation. This will be particularly useful in a technical sales or system design environment.

Level 3 – Investigating and defining requirements 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different tasks that are typical of your job in Information Technology:

- 1. Using a range of investigative methods effectively -** methods of eliciting the information required to identify customer needs and constraints eg:
 - carrying out observations (e.g. of manual processes)
 - examination of existing documents, records or software
 - participating in site surveys
 - interviewing relevant people
 - participating in workshops
 - using pre-defined questionnaires
- 2. Analysing information to identify relevant needs and constraints**
- 3. Prioritising client/customer needs**
- 4. Producing requirements definitions** e.g.
 - Capacity
 - Function
 - Location
 - Time factors
 - Compatibility
- 5. Clearly recording the results of analyses to agreed formats**
- 6. Checking identified needs, constraints and priorities with client/customer**
- 7. Preserving the confidentiality of client/customer information**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. Relevant client/customer needs** (the current and anticipated needs of the client/customer for which a system is to be developed) **and constraints** with which the system to be developed must conform. These may be imposed for

example by the client/customer (either explicitly or implicitly) or the environment in which the system will operate.

This list is not exhaustive nor will all examples be applicable in all contexts:

- a **needs** eg:
 - data
 - functionality (e.g. inputs, processes and outputs)
 - capacity (e.g. numbers of users, throughput, data storage)
- b **constraints** eg:
 - compatibility with existing systems
 - physical environment (e.g. availability of power supplies, locations, ventilation etc.)
 - development timescale
 - financial
 - regulatory
 - reliability

2. Defects which can arise in information when it is collected eg:

- inaccuracies
- duplications
- omissions
- inconsistencies
- redundancies

Assessment Guidance

You will need to produce at least three complete tasks, demonstrating skills, techniques and knowledge outlined above. The assessment of a series of unconnected skills is not acceptable.

How do I demonstrate Knowledge?

The knowledge evidence for requirement 1 – Relevant client/customer needs – must be assessed separately for **each** of the assessment tasks. The knowledge must therefore be directly related to the task being assessed. Requirement 2 – information defects – need only be assessed once, except that if a particular task carries an unusually high risk regarding the quality or availability of information, then you should show that you are aware of the risk and that you are taking steps to minimise it. The remainder of the knowledge evidence

How can I satisfy the skills and techniques part?

The tasks you carry out for this unit must start with a specific request for a customer's requirements to be investigated and defined. The size of the requirement must be substantial, for example a single user Internet connection would not be sufficient, but a 20-user office network with broadband Internet access and wireless networking would. In other words the requirement must be large enough to justify going through all of the main steps in

the skills and techniques section and the process should be fully documented, as it would normally be.

Summary

The successful completion of this unit recognises your skill in being able to start with a very general requirement from a customer in terms of what they want to achieve, and convert that to a detailed technical specification that will meet those needs. This will be particularly useful in a technical sales or system design environment.

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Managing software development – level 3

'Software development' commences with an agreed requirements definition and covers the creation of software designs, creation of the actual software components and finally installation and testing of the software.

This AOC is about the ability to manage the technical aspects of this process.

The development could take place either in the context of an independent software house or an internal software development department. No particular development environment, software/hardware platform or application area (e.g. technical, scientific, financial etc.) is implied. The term 'software components' is used to cover code, data structures and interfaces (screens/forms, print-outs, data, controls, measurements etc.) and should be interpreted appropriately. As examples: an interactive web-page and a database report based on a query are combinations of code and interface and both will be underpinned by one or more data structures.

Example of responsibility:

Supervision of a small team of developers often working on a defined part of a large project, or responsible for a small project.

This is an optional unit, which should normally be assessed in the workplace but can be assessed in an approved realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 3</p> <p>Supervise the technical aspects of the software development work of others.</p>	<ul style="list-style-type: none"> • providing guidance on specified organisational requirements and procedures to immediate colleagues. 	<ul style="list-style-type: none"> • what organisational requirements and software development procedures are to be followed

Level 3 – Managing software development 3

Skills and Techniques

For this unit you must demonstrate skills and techniques by providing evidence of at least **THREE** substantial instances where you have actively managed the technical aspects of software development:

1. Providing guidance on specified organisational requirements and procedures to immediate colleagues

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of your job in Information Technology**:

- 1. What organisational requirements and software development procedures are to be.** These should cover the following main areas:
 - a **Requirements:**
 - form, content and structure of program designs
 - style for internal documentation of software components
 - conventions for naming of software components
 - format, content and presentation of maintenance documentation
 - b **Procedures:**
 - creating detailed designs software components and documentation
 - testing and installing software
 - creating outline designs
 - specifying runtime environments
-

Assessment Guidance

The essential feature of this unit is that you need to be overseeing, supervising or managing the development of software. You could be a team leader overseeing the development of a series of software components by a number of colleagues with the eventual aim of combining them into a larger application.

How do I demonstrate Knowledge?

Although the knowledge and understanding requirements are largely organisation-specific, they will mostly be based on sound generic requirements and procedures. You should therefore be able to demonstrate your knowledge of both the actual requirements and procedures that you have to deal with, and the

principles behind them. This should be covered by professional discussion with your assessor and by practical demonstration in the work that you are doing.

How can I satisfy the skills and techniques part?

The tasks in this unit involve the active management of software development work done by other people. You are required to give guidance on specified organisational requirements and procedures to immediate colleagues. That means that you will be the 'expert' on those matters – you may have been briefed by your manager or a software designer on the exact requirements and procedures and instructed to ensure that they are followed. Most of this advice is likely to be given orally, and so it is vital that you keep a detailed record of all the issues you deal with during each project. This can then be examined and verified with the project team members to establish an overall picture of your performance. Remember that you have been put in a position where you are unlikely to be constantly supervised, so there will probably not be anyone around to observe most of your advisory work.

Perhaps a good opportunity for evidence gathering might be a team meeting where you would review progress, re-enforce the more important requirements and procedures, and answer any queries the team members might have. The detailed minutes, or an audio/video tape of the proceedings would be useful here, as would statements from one or more team members who had particularly benefited from your advice.

Note – the above situations **must** be genuine and not set up just for the purposes of assessment. They must be an integral part of the software development process.

Summary

The successful completion of this unit recognises not only your detailed knowledge and understanding of specific software development requirements and procedures, but also your ability to give advice to immediate colleagues and to manage the software development process.

Quality management of ICT products and services – level 3

This is the ability to develop, maintain and implement a quality management system covering an IT or Telecomms environment. This could be in the context of delivering a service (such as providing ICT support or equipment repair and maintenance) or developing a product (such as software, hardware or a network installation).

The purpose of a quality management system is to ensure that products or services consistently meet agreed levels of quality. Quality may be measured in terms of customer satisfaction, levels of service, performance against specifications or other appropriate measures.

The terms used here are intended to be generic and may need to be interpreted according to the terminology used by particular environments or quality standards (e.g. the ISO9000 series or BS5750).

Compliance with quality procedures is embedded, at every level where relevant, in other units (as part of following organisational procedures). The **creation, implementation** etc. of these organisational procedures for quality are the subject of this unit.

Examples of activities:

Understanding and implementing procedures, monitoring work performance and product quality, collecting and processing information relating to quality.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. All assessment tasks must be relevant to Information Technology and directly related control systems.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
Level 3 Monitor quality management procedures.	<ul style="list-style-type: none"> • monitoring compliance with relevant parts of procedures • providing guidance to immediate colleagues on quality. 	<ul style="list-style-type: none"> • specified parts of organisational quality management procedures

Level 3 – Quality management of ICT products and services 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different quality management tasks that are typical of your job in Information Technology:

- 1. Monitoring compliance with relevant parts of procedures** - activities concerned with ensuring that working practices comply with quality management procedures and that work-in-progress and completed products are of the required quality eg:
 - participating in audits of working practices and inspections of work
 - gathering and recording information on quality
 - initiating suitable actions to deal with identified failures in quality

 - 2. Providing guidance to immediate colleagues on quality**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Specified parts of organisational quality management procedures** - The procedures forming a quality management system. Typically these will include:
 - customer agreements
 - activity planning
 - third-party monitoring
 - change control
 - work-in-progress
 - testing
 - defects and defective components
 - audit and inspection
 - customer feedback
 - communication
-

Assessment Guidance

The tasks required for this unit might be part of your responsibilities as a supervisor or line manager, they could be a large part of your role as a quality controller, or they might perhaps reflect your role as a member of a quality audit team. Whatever the circumstances, you will need to be able to stand

back from a particular job or process, gather information about compliance with particular procedures and/or quality standards, and to report on them in an objective way

How do I demonstrate Knowledge?

The knowledge requirements relate very specifically to your own quality management system and the procedures that exist to ensure that the quality standards are adhered to. You may have been given some training in quality management, so evidence could come from that process, so long as the knowledge tested relates to your job in Information Technology. Your assessor might want to conduct a professional discussion to explore your detailed knowledge of the particular procedures and standards that you work to.

How can I satisfy the skills and techniques part?

The practical tasks for this unit should be comprehensively documented, as they should in any quality management activity. Each task should where possible be different, and at least one should involve significant feedback and advice on quality issues to immediate colleagues. That means not merely quoting relevant parts of the quality procedures, but advising how to apply them in specific and non-routine situations. This could be as a team member or leader responsible for quality monitoring within that team, or it could be as part of an independent process to monitor compliance. There may or may not be safety implications, too, for instance you might be checking on work practices in a cable laying team, where poor work practices could result in failure of the structure in which the cable is being laid (foot through a ceiling or worse). This will have implications for the safety of both people and property.

Summary

Some parts of industry have a mandatory requirement for a quality management process in the working environment. Successful completion of this unit recognises that, in addition to any technical skills and knowledge you possess, you are also able to apply knowledge of quality procedures and standards to the work processes you are involved with, to assess compliance and also to give advice to colleagues.

Remote support for products or services – levels 1, 2 and 3

This is the provision of remote support in a controlled environment to customers (internal or external) relating to products or services. It involves the gathering of information and the provision of assistance and advice to support the customer. This will typically be carried out as a contact centre (including technical help desk) activity.

Remote support will normally include:

- communication with customers
- providing information or advice
- resolution or escalation of problems
- maintenance of records e.g. users, problems, resolutions.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. It must be completed in an Information Technology environment, e.g. a technical helpdesk or other facility where internal or external customers go for remote support.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Provide basic support on specified products or services</p>	<ul style="list-style-type: none"> • complying with organisational requirements • confirming customer identity and validating requests • communicating information on specified products or services • resolving and escalating requests. 	<ul style="list-style-type: none"> • the specified products or services to be supported • specified parts of organisational requirements for customer care.
<p>Level 2 Provide support on specified products or services</p>	<ul style="list-style-type: none"> • complying with organisational requirements • confirming customer identity and validating requests • communicating information on specified products or services • making recommendations based on customer needs • resolving and escalating requests and handling basic complaints. 	<ul style="list-style-type: none"> • the specified products or services to be supported • relevant parts of organisational requirements for customer care.
<p>Level 3 Support products or services</p>	<ul style="list-style-type: none"> • confirming customer identity and validating requests • communicating information on products or services • making recommendations based on customer needs • resolving and escalating requests and handling complaints • monitoring compliance with organisational requirements for customer support. 	<ul style="list-style-type: none"> • the products or services to be supported • organisational requirements for customer care.

Level 1 – Remote support for products or services 1

Skills and Techniques

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. There should be technical content relating to Information Technology within each task:

- 1. Complying with organisational requirements**
- 2. Confirming customer identity and validating requests -**
Ensuring customer information used or given is correct:
 - using specified methods and sources (e.g. post code, contract list, username)
 - escalating invalid requests
- 3. Communicating information on specified products or services -** Communicating product or service information in a positive and professional way with the customer:
 - identifying customers needs
 - accurately collecting and logging relevant information from the customer
 - providing product and service features to customers
 - ensuring customer understanding of the information provided
- 4. Resolving and escalating requests -** The handling and resolution of customer issues in a constructive manner that ensures customers satisfaction:
 - Following organisational procedures

Note: Dealing with customer complaints, other than escalation, is not required at this level.

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The specified products or services to be supported -** features, benefits or uses of products or services
 - how to identify the products or services
 - basic features and uses of the products or services
 - standard responses to frequently asked requests
- 2. Specified parts of organisational requirements for customer care -** These are the objectives, procedures, processes or guidelines for customer care as defined by the

organisation. These must include procedures or processes for compliance with all relevant legislation or regulations eg:

- customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)
 - authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
 - escalation, resolution and complaint handling
 - quality assurance procedures
 - compliance with relevant legislation and regulations (e.g. data protection, financial services)
 - maintenance and communication of organisational brand or image
 - organisational aims and objectives
-

Assessment Guidance

The two or more tasks you choose for assessment must in total cover all of the requirements of the unit. By definition, assessment of evidence in an actual workplace will have to be done on an opportunity basis – live calls cannot be predicted. Evidence in a realistic working environment, such as a training suite, can be controlled and candidate observation is easier to arrange.

How do I demonstrate Knowledge?

The knowledge requirement should mostly be covered during periods of training and may well have been assessed using written or computer-based tests. Remaining knowledge evidence can be assessed by your assessor or expert witness, using observation or questioning techniques.

How can I satisfy the skills and techniques part?

All of the items in the skills and techniques list should occur during most calls. Both you and your assessor or expert witness will be aware of the range of call types generally experienced in your particular workplace. For assessment, you should choose the calls that contain as many features as possible, and that allow you to show your abilities to the full. Assessment evidence could be in the form of a written report from a remote monitoring session, video and audio tape (properly authenticated), or reports from customers, trainers etc. who have been able to observe you first hand.

Summary

Achievement of this unit recognises skill in supporting customers remotely, often under pressure, in a technical environment – an attribute that is important to employers in a highly competitive industry.

Level 2 – Remote support for products or services 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. There should be technical content relating to Information Technology within each task:

- 1. Complying with organisational requirements**
- 2. Confirming customer identity and validating requests -**
Ensuring customer information used or given is correct:
 - using specified methods and sources (e.g. post code, contract list, username)
 - escalating invalid requests
 - informing customer when authorisation criteria are not met
- 3. Communicating information on specified products or services -** Communicating product or service information in a positive and professional way with the customer:
 - identifying customers needs
 - accurately collecting and logging relevant information from the customer
 - providing product and service features to customers
 - ensuring customer understanding of the information provided
 - categorising requests and directing customers appropriately
 - managing customer expectations (e.g. by confirming outcomes, timescales or costs)
- 4. Making recommendations based on customer needs**
- 5. Resolving and escalating requests and handling basic complaints -** The handling and resolution of customer issues in a constructive manner that ensures customers satisfaction:
 - using probing questions
 - displaying patience and understanding with demanding or emotional customers

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

The specified products or services to be supported -
features, benefits or uses of products or services

- how to identify the products or services

- basic features and uses of the products or services
- standard responses to frequently asked requests
- benefits of the products and services
- frequently used product or service options
- standard features and common uses of the products or services

Relevant parts of organisational requirements for customer care - These are the objectives, procedures, processes or guidelines for customer care as defined by the organisation.

These must include procedures or processes for compliance with all relevant legislation or regulations eg:

- customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)
- authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
- escalation, resolution and complaint handling
- quality assurance procedures
- compliance with relevant legislation and regulations (e.g. data protection, financial services)
- maintenance and communication of organisational brand or image
- organisational aims and objectives

Assessment Guidance

The two or more tasks you choose for assessment must in total cover all of the requirements of the unit. By definition, assessment of evidence in an actual workplace will have to be done on an opportunity basis – live calls cannot be predicted. Evidence in a realistic working environment, such as a training suite, can be controlled and candidate observation is easier to arrange.

How do I demonstrate Knowledge?

The knowledge requirement should mostly be covered during periods of training and may well have been assessed using written or computer-based tests. Remaining knowledge evidence can be assessed by your assessor or expert witness, using observation or professional discussion.

How can I satisfy the skills and techniques part?

Items 1-4 in the skills and techniques list should occur during most calls; item 5 – dealing with basic complaints and escalating requests – will not happen in every case. Both you and your assessor or expert witness will be aware of the range of call types generally experienced in your particular workplace. For assessment, you should choose the more comprehensive calls that contain as many features as possible, and that allow you to show your abilities to the full. Assessment evidence could be in the form of a written report from a remote monitoring session, video and audio tape (properly authenticated), or reports from

customers, trainers etc. who have been able to observe you first hand.

Summary

Achievement of this unit recognises skill in supporting customers remotely, often under pressure, in a technical environment – an attribute that is important to employers in a highly competitive industry.

Level 3 – Remote support for products or services 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different remote support tasks that are typical of your job in Information Technology:

1. Confirming customer identity and validating requests -

Ensuring customer information used or given is correct:

- using specified methods and sources (e.g. post code, contract list, username)
- escalating invalid requests
- informing customer when authorisation criteria are not met
- investigating discrepancies between detail provided and authorisation criteria

2. Communicating information on products or services -

Communicating product or service information in a positive and professional way with the customer:

- identifying customer's needs
- accurately collecting and logging relevant information from the customer
- providing product and service features to customers
- ensuring customer understanding of the information provided
- categorising requests and directing customers appropriately
- managing customer expectations (e.g. by confirming outcomes, timescales or costs)
- discussing advantages and disadvantages of complex products and services
- discussing how the service product best fits the customer's needs
- keeping customer informed on progress
- asking effective and appropriate probing questions

3. Making recommendations based on customer needs**4. Resolving and escalating requests and handling**

complaints - The handling and resolution of customer issues in a constructive manner that ensures customer satisfaction:

- using probing questions
- displaying patience and understanding with demanding or emotional customers
- defusing volatile situations using appropriate communication techniques

- delivering difficult messages to customers and explaining the reasons behind the decision
- assessing priority of complaints
- resolving routine complaints

- 5. Monitoring compliance with organisational requirements for customer support** - activities concerned with ensuring compliance with organisational requirements for provision of customer support eg:
- participating in audits of working practices and monitoring of work
 - gathering and recording information on customer support provision

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The products or services to be supported** - features, benefits or uses of products or services eg:
 - how to identify the products or services
 - basic features and uses of the products or services
 - advanced features, benefits and options of products and services
 - how to identify alternative products or services to meet customers needs
 - standard responses to frequently asked requests
 - benefits of the products and services
 - frequently used product or service options
 - standard features and common uses of the products or services
 - where to obtain information on infrequently used product or service features or options
 - how the products or services interact with others commonly available
 - the impact of introducing new products and services
- 2. Organisational requirements for customer care** - These are the objectives, procedures, processes or guidelines for customer care as defined by the organisation. These must include procedures or processes for compliance with all relevant legislation or regulations eg:
 - customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)
 - authorisation procedures (e.g. how to confirm caller identity, how to validate requests)
 - escalation, resolution and complaint handling
 - quality assurance procedures
 - compliance with relevant legislation and regulations (e.g. data protection, financial services)

- maintenance and communication of organisational brand or image
 - organisational aims and objectives
-

Assessment Guidance

The tasks for this unit need to be substantial and complex and they must in total cover all of the requirements of the unit. By definition, assessment of evidence in an actual workplace will have to be done on an opportunity basis – live calls cannot be predicted. Evidence in a realistic working environment, such as a training suite, can be controlled and candidate observation is often easier to arrange.

How do I demonstrate Knowledge?

The knowledge requirement should mostly be covered during periods of training and may well have been assessed using written or computer-based tests. Your knowledge of these items must be more than just a basic overview – the equipment and systems involved must be more complex and the issues you deal with will need some problem solving and decision making on your part. That will involve a more comprehensive knowledge of procedures and an acute awareness of issues surrounding organisational and brand image. Remaining knowledge evidence can be assessed by your assessor or expert witness, using observation or professional discussion.

How can I satisfy the skills and techniques part?

Items 1-3 in the skills and techniques list should occur during most calls – note, however that there is little in the way of escalation here, so you must show that you can deal with a wide range of issues, including investigating instances of failed caller validation. Item 4 – resolving and escalating requests, and dealing with complaints – will not happen in every case, but you should show that you can deal with most, if not all cases, depending on your level of authority to do so. As a guide, you should be able to deal with all but those complaints that have a serious commercial, financial or legal implication that should be dealt with by senior management – in practice about 90-95% of all complaints. Both you and your assessor or expert witness will be aware of the range of call types generally experienced in your particular workplace. For assessment, you should choose the most comprehensive calls that contain as many features as possible, and that allow you to show your abilities to the full. Assessment evidence could be in the form of a written report from a remote monitoring session, video and audio tape (properly authenticated), or reports from customers, trainers etc. who have been able to observe you first hand.

The final item deals with monitoring compliance. You might be a team leader responsible for the everyday monitoring of your team

members; you might be part of a compliance team monitoring a larger selection of staff, or you could be a member of a quality audit team. The evidence for this part of the skills and techniques should be well documented and organised and show that you are able to make objective comparisons between actual and required or expected performance.

Summary

Achievement of this unit recognises skill in supporting customers remotely, often under pressure, in a technical environment – an attribute that is important to employers in a highly competitive industry. It also recognises your ability to deal with the more complex and sensitive issues that are escalated by more junior colleagues; lastly it shows that you can take responsibility for quality monitoring and control.

Security of ICT systems – levels 1 and 3

This is the ability to maintain the integrity of a system or network, its data and its immediate environment. This involves controlling access, regulating use and implementing contingency plans. It may also involve the authorisation and monitoring of access, investigation of unauthorised access and the protection of data, infrastructure and services. Security, however, should not unnecessarily impede access or effective use. Breaches in security may be caused by human actions, either accidental, malicious or negligent, or through incorrect installation, configuration or operation.

Level 1 describes the universal responsibilities that everyone at work has for Security. **(Level 2 is identical and therefore omitted.)**

Level 3 is concerned with the management of the Security of ICT Systems.

Typically, security should cover areas such as:

- communications
- infrastructure
- cryptography
- system operations
- organisational procedures

These areas must be considered as parts of a framework of general security.

You are likely to be in a role where you are required to follow a number of security procedures, both internal to systems and external to them, as part of your normal job.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Comply with relevant security requirements</p>	<ul style="list-style-type: none"> • using specified security tools to identify breaches of security • complying with organisational security procedures. 	<ul style="list-style-type: none"> • specified data protection methods • specified methods of providing physical security for ICT systems • relevant organisational security procedures • what type of security breaches can occur at work.
<p>Level 3 Monitor safety procedures</p>	<ul style="list-style-type: none"> • using security tools to identify and assist the investigation of security breaches • carrying out security risk assessments • monitoring compliance with relevant parts of organisational security procedures • providing guidance to immediate colleagues on ICT security. 	<ul style="list-style-type: none"> • specified data protection methods • specified methods of providing physical security for ICT systems • relevant organisational security procedures • what common types of security breach can affect the organisation.

Level 1 – Security of ICT systems 1

Skills and techniques

For this unit you must demonstrate the following skills and techniques. This should be done while carrying out at least **TWO** different tasks typical of your job in Information Technology and demonstrating your competence in:

1. Using specified Security Tools to identify security breaches

These are the devices and facilities employed in and around a system to prevent unauthorised access and use, to preserve the integrity of the system and the data associated with it eg:

- using internal system tools (e.g. passwords, anti-virus software, firewalls and encryption facilities)
- using external tools (e.g. access control devices)

2. Compliance with security procedures

Activities concerned with ensuring that working practices comply with security procedures e.g. physical security, passwords, virus scanning etc.

Knowledge and Understanding

For this unit you must demonstrate knowledge and understanding of the following:

1. Specified data protection methods

Methods used to protect the integrity of data being held on a system and prevent unauthorised access to data eg:

- anti-virus software
- use and protection of passwords or access codes
- backup and storage.

2. Physical security for ICT systems

Physical security should be assessed at all stages of system planning and support. Most system protection methods can be overcome with suitable physical access. Unauthorised physical access should therefore be prevented using eg:

- access control devices (eg: locks, biometric controls, CCTV)
- limiting visibility of data (eg: by positioning of monitors, using encryption)
- shielding (eg: cable screening, Faraday cages)

3. Relevant organisational security procedures

These are procedures written specifically for a system or whole organisation using general principles tailored to particular needs

4. Security breaches

These are incidents where one or more security measures have failed to prevent unauthorised access to a system, its data or its environment, whether or not any damage has been done eg:

- unauthorised use of a system without damage to data
- unauthorised removal or copying of data or code from a system
- damage to or destruction of physical system assets and environment
- damage to or destruction of data or code inside or outside the system.

Assessment Guidance

You will need to produce evidence from at least **TWO** tasks, demonstrating skills, techniques and knowledge outlined in the unit. The tasks should be as different as possible, and, together they must be typical of the jobs that you normally do

How do I demonstrate Knowledge?

In this unit you will be assessed on your knowledge and use of security devices to prevent unauthorised use of the systems that you install maintain and use as part of your job. Much of this security will be IT based and will apply equally to all IT systems. However, you should also demonstrate a good knowledge of the physical security of areas such as network connection points, server rooms, cable ducts, workstations and remote sites. Again, the basic principles for this apply to any installation.

Much of this knowledge will be demonstrated in the course of your normal work, but some concerns things that 'could' happen, and so may not occur often. You should therefore make sure that, **as a minimum** you have a good knowledge of:

- IT based security methods such as anti-virus controls, passwords and data back-up, including the need to prevent disclosure of security codes, passwords etc
- physical security methods such as swipe cards, biometric controls, CCTV etc
- The security procedures in **your** organisation **and** in those that you have to work within, perhaps as a contractor or a field support technician
- types of security breach that could happen, particularly those that could occur on the systems you work with and in the environments where they are used

Most of the knowledge will be based upon your own work situation, but you should have a wider knowledge of the more general issues that do not necessarily apply to your own job

How can I satisfy the skills and techniques part?

The types of security procedure you need to demonstrate competence in following can be divided into two parts:

- security functions that are part of the system and generally operate only when the system is running (eg: passwords, access codes, data back-up)
- security arrangements for the protection of the system itself (eg: CCTV, locks and other access devices)

The activities you should demonstrate competence in will concentrate on:

- the protection of the system and its data
- the identification of possible security breaches

The assessment should be carried out as part of your normal work tasks, in other words, you should use appropriate security procedures while you are working, and you should also be involved in identifying possible security breaches. If you carry out a number of different types of job requiring different types of security arrangement, then you should be assessed on a significant sample of those procedures.

Assessment can be carried out in a realistic work environment if sufficient opportunity is not available during real work tasks.

Summary

This unit covers a very wide range of activities concerned with the protection of ICT systems and their data. Successful completion of this unit will confirm that you are aware of the main security issues surrounding your job in the ICT industry and that you are able to follow appropriate security procedures to minimise the risks.

Level 3 – Security of ICT systems 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different security tasks that are typical of your job in Information Technology:

- 1. Using security tools to identify and assist the investigation of security breaches** - these are the devices and facilities employed in and around a system to prevent unauthorised access and use, to preserve the integrity of the system and the data associated with it eg:
 - using internal system tools (e.g. passwords, anti-virus software, firewalls and encryption facilities)
 - using external tools (e.g. access control devices)
 - monitoring systems
- 2. Carrying out security risk assessments**
- 3. Monitoring compliance with relevant parts of organisational security procedures** - activities concerned with ensuring that working practices comply with security procedures e.g.
 - participating in security audits
 - gathering and recording information on security
 - initiating suitable actions to deal with identified breaches of security
- 4. Providing guidance to immediate colleagues on ICT security.**

Knowledge and Understanding

For this unit you must demonstrate knowledge and understanding of the following **in the context of Information Technology**:

- 1. Specified data protection methods** - methods used to protect the integrity of data being held on a system and prevent unauthorised access to data eg:
 - anti-virus software
 - use and protection of passwords or access codes
 - backup and storage
 - system data security facilities
 - surveillance and monitoring methods
 - effects of system configuration on data protection

- 2. Specified methods of providing physical security for ICT systems** - physical security should be assessed at all stages of system planning and support. Most system protection methods can be overcome with suitable physical access. Unauthorised physical access should therefore be prevented using eg:
- access control devices (eg: locks, biometric controls, CCTV)
 - limiting visibility of data (eg: by positioning of monitors, using encryption)
 - shielding (eg: cable screening, Faraday cages)
 - types and appropriate uses of access records and authorisations
 - how to allocate access authority
 - how to configure access control devices
- 3. Relevant organisational security procedures** - these are procedures written specifically for a system or whole organisation using general principles tailored to particular needs
- 4. What common type of security breaches can affect the organisation** - these are incidents where one or more security measures have failed to prevent unauthorised access to a system, its data or its environment, whether or not any damage has been done eg:
- unauthorised use of a system without damage to data
 - unauthorised removal or copying of data or code from a system
 - damage to or destruction of physical system assets and environment
 - damage to or destruction of data or code inside or outside the system.

Assessment Guidance

The three or more tasks associated with this unit must cover all of the headings under skills and techniques, and the content must be related to Information Technology. Some communications equipment may be involved e.g. as part of a wireless network, but the tasks must relate to the security of IT systems.

How do I demonstrate Knowledge?

The subject of security in IT systems is largely knowledge based. You may have had special training in security procedures and techniques. Any exams or tests during that training might be used as knowledge evidence. Your assessor could use oral or written questioning to test your knowledge, or that might be done during a professional discussion. You must demonstrate a comprehensive understanding of the general and the more specific threats to your particular system(s), together with the methods available and the laid down procedures for protecting against those threats. For instance, you might be responsible for a LAN that uses commercially sensitive data to which a large

number of people have access. You must show a good knowledge of the ways in which that data could be intercepted, and the ways in which it can be encrypted to deny access to an intruder. You should also be fully aware of the potential consequences of security breaches in your own systems. Physical security in IT systems is sometimes quite difficult to achieve because some access to users needs to be maintained, but restricted to a level where the risk is acceptable. You should have a thorough knowledge of the issues and solutions to that problem.

How can I satisfy the skills and techniques part?

In practical terms, the tasks should include the prevention and detection of security breaches using the various system tools and physical methods available to you. It should also cover risk assessment – assessing the likelihood and consequences of a number of different types of security breach. Compliance monitoring and advising immediate colleagues might form part of the same task – you might carry out an audit of security procedures, find some shortfalls and then provide feedback and advice to the staff concerned. All tasks should be carefully documented – apart from being good evidence, security issues often have legal implications and it is always good practice to keep good records.

Summary

The management of IT system security is a vitally important responsibility. Successful completion of this unit recognises that you have the specialist knowledge and skill to assess and prevent security breaches of all types, thus protecting a system and its most valuable component – its data.

Software development – component creation – levels 2 and 3

'Software development' commences with an agreed requirements definition and covers the creation of software designs/specifications, creation of the actual software components and finally installation and testing of the software.

This AOC is about creating software. The development could take place either in the context of an independent software development company or an internal software development department. No particular type of programming language, development environment, software/hardware platform or application area (e.g. technical, scientific, financial etc.) is implied. The term 'software components' is used to cover:

- processes i.e. how inputs or stored data are manipulated to form outputs or new data
- data structures for storing and accessing data
- inputs such as data entry screens, data files or sensor inputs and
- outputs such as reports, information screens and device controls (e.g. actuators).

These should be interpreted in the context of the development environment in use e.g. code (processes) and arrays (and other data structures) are combined in a single component in some programming languages.

As examples: an interactive web-page, a database report based on a query and an engine management system are all combinations of processes, inputs and outputs underpinned by one or more data structures.

'Development environment' is the system (software and hardware) which will be used to create the software components. Depending on the programming language(s) to be used this may include an Integrated Development Environment (e.g. for Visual Basic) or discrete elements such as editors, interpreters, compilers, linkers etc.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 2 Create software components from given detailed designs.</p>	<ul style="list-style-type: none"> • creating, testing and debugging software components based on detailed designs • using meaningful names for software components and their constituent items • using a software development environment effectively • making efficient use of common predefined functions 	<ul style="list-style-type: none"> • specified organisational requirements for software development • specified organisational software development procedures • the content of detailed designs • commonly-used facilities of the development environment in use • the syntax and constructs of the programming language in use • commonly-used predefined functions of the programming language in use.
<p>Level 3 Create software from given specifications.</p>	<ul style="list-style-type: none"> • creating detailed designs for software from given specifications • creating software components from detailed designs • building, testing and debugging software • using software development environment(s) effectively • making efficient use of available predefined functions • selecting meaningful names for software components and their constituent items • providing guidance on software creation and debugging to immediate colleagues. 	<ul style="list-style-type: none"> • specified organisational requirements for software development • relevant organisational software development procedures • the content of software specifications • required content of detailed designs • available facilities of the development environment(s) in use • the syntax and constructs of the programming language(s) in use • available predefined functions of the programming language(s) in use.

Level 2 – Software development – component creation 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit.

1. **Creating, testing and debugging software components based on detailed designs** - These should be interpreted in the context of the development environment in use e.g. code (processes) and arrays (and other data structures) are combined in a single component in some programming languages:
 - processes (i.e. how inputs or stored data are manipulated to form outputs or new data)
 - data structures (for storing and accessing data)
 - inputs (such as data entry screens, data files or sensor inputs)
 - outputs (such as reports, information screens and device controls (e.g. actuators)).
 2. **Using meaningful names for software components and their constituent items**
 3. **Using a software development environment effectively**
 4. **Making efficient use of common predefined functions**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

1. **Specified organisational requirements for software development** - these are the rules or internal standards to which developers within the organisation should work. They should cover the following topics:
 - form, content and structure of program designs
 - style for internal documentation of software components
 - conventions for naming of software components
 - format, content and presentation of maintenance documentation
2. **Specified organisational software development procedures** - these should cover the following main areas:
 - creating detailed designs, software components and documentation
 - testing and installing software.
3. **The content of detailed designs**

- 4. Commonly-used facilities of the development environment in use**
 - 5. The syntax and constructs of the programming language in use**
 - 6. Commonly-used predefined functions of the programming language in use** – i.e. those that are supplied as standard defaults or those that have been added for use as standard functions
-

Assessment Guidance

The two or more comprehensive tasks that you use for the assessment of this unit should be complete tasks, although they are likely to be part of a larger project. The use of a series of un-connected skills as evidence is not acceptable.

How do I demonstrate Knowledge?

Much of the knowledge evidence will be demonstrated during the normal work that you do. However, your assessor or expert witness might want to explore your knowledge and understanding of a wider range of functions and features of the programming language and of the development environment than you normally use. This can be done using written or oral questioning, or a professional discussion might be more suitable.

How can I satisfy the skills and techniques part?

The tasks that you complete will obviously vary considerably depending upon the environments and languages used but at this level, you should produce them from detailed designs given to you. The tasks should be different and in total, reflect the full range of work that you do. They do not all have to use the same development environment or language, but equally you can use the same ones throughout. The end result should be a useful software component that has been produced from detailed designs, by effective use of a development environment. The uses of the software component could be anything from part of an animated web page, to CNC machining, or perhaps to control valves in a water treatment plant, or even automatic climate control for a large hotel or office building. The main assessment points will be exactly the same for each case. The software should be properly documented as you would normally do and it should be tested and de-bugged using normal accepted methods for the development environment and language that you use.

Summary

The successful completion of this unit recognises your ability to produce a working software component from a detailed design, by efficient use of a programming language and/or a suitable development environment.

Level 3 – Software development – component creation 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit.

- 1. Creating detailed designs for software from given specifications**
- 2. Creating software components from detailed designs** - these should be interpreted in the context of the development environment in use e.g. code (processes) and arrays (and other data structures) are combined in a single component in some programming languages:
 - processes (i.e. how inputs or stored data are manipulated to form outputs or new data)
 - data structures (for storing and accessing data)
 - inputs (such as data entry screens, data files or sensor inputs)
 - outputs (such as reports, information screens and device controls (e.g. actuators))
- 3. Building, testing and debugging software**
- 4. Using software development environment(s) effectively**
- 5. Making efficient use of available predefined functions**
- 6. Selecting meaningful names for software components and their constituent items**
- 7. Providing guidance on software creation and debugging to immediate colleagues**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Specified organisational requirements for software development** - these are the rules or internal standards to which developers within the organisation should work. They should cover the following topics:
 - form, content and structure of program designs
 - style for internal documentation of software components
 - conventions for naming of software components
 - format, content and presentation of maintenance documentation

2. **Specified organisational software development procedures** -these should cover the following main areas:
 - creating detailed designs, software components and documentation
 - testing and installing software
 - creating outline designs
 - specifying runtime environments
 3. **Required content of detailed designs** - these describe and specify the software to be created and how it will be tested
 - a **Outline designs:**
 - data (e.g. entities, attributes and relationships)
 - functionality (e.g. inputs, processes and outputs)
 - capacity (e.g. processing, storage and access)
 - b **Runtime environment:**
 - hardware and software
 4. **Available facilities of the development environment(s) in use** – even though they might not be in current or common use
 5. **The syntax and constructs of the programming language(s) in use**
 6. **Available predefined functions of the programming language(s) in use** – i.e. those that are supplied as standard defaults or those that have been added for use as standard functions– even though they might not be in current or common use
-

Assessment Guidance

The three or more substantial and complex tasks that you use for the assessment of this unit should be complete tasks, although they may be part of a larger project. The use of a series of un-connected skills as evidence is not acceptable.

How do I demonstrate Knowledge?

Some of the knowledge evidence will be demonstrated during the normal work that you do. However, you will notice that in some instances, you need to show knowledge and understanding of things that you might not use every day, such as available pre-defined functions of the programming language(s) that you use. You might never have used some of them, nevertheless you need to be able to explain their function and discuss when they might be used. You will be starting each task with a design that you may have produced, or that you may have been supplied with. You need to demonstrate understanding of software development procedures, including the requirements for the designs you will be using. These aspects can be assessed in a variety of ways, professional discussion, oral and written questions or perhaps workplace observation.

How can I satisfy the skills and techniques part?

The three or more tasks that you carry out for this unit should include at least one example of creating software components from your own design and at least one using someone else's detailed design. Most of the skills and techniques are self-explanatory, but you should note the words 'effectively' in requirement 4. and 'efficient' in requirement 5. Your assessor and/or expert witness will be looking at how you work to make sure that you make best use of the development environment and the functions in the programming language. Your development work should be well documented as part of normal development practice, and so this can be used as the main evidence for the skills and techniques assessment.

The final requirement is that you give guidance to immediate colleagues on software development and debugging. If you are a senior or more experienced member of a software development team then this evidence will occur naturally, because, by definition, you are an 'expert'. You should keep a record of the occasions where you are asked for guidance, noting the date and time, the person who contacted you, the nature of the query and the guidance you gave them. You might have an opportunity during a team meeting to gather evidence for this, perhaps using the minutes, or by recording the proceedings in some way. This could be backed up by statements from colleagues and/ or superiors to complete the overall picture of an experienced software developer who is able to pass on their expertise to others.

Summary

The successful completion of this unit recognises your ability, not only to design and produce working software components from a detailed designs and specifications, but to pass on your expertise by giving useful and accurate guidance to colleagues. These are all valuable assets in a more experienced member of a software development team.

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Software development - design – levels 2 and 3

'Software development' commences with an agreed requirements definition and covers the creation of software designs, creation of the actual software components and finally installation and testing of the software.

This AOC is about the ability to create software designs. The development could take place either in the context of an independent software house or an internal software development department. No particular development environment, software/hardware platform or application area (e.g. technical, scientific, financial etc.) is implied. The term 'software components' is used to cover code, data structures and interfaces (screens/forms, print-outs, data, controls, measurements etc.) and should be interpreted appropriately. As examples: an interactive web-page and a database report based on a query are combinations of code (e.g. VB, C++, Java etc.) and interface and both will be underpinned by one or more data structures.

The 'requirements definition' sets out the customer's requirements for the software. It is often a formal contract or agreement between customer and software developer. It can also provide metrics to assess the performance of the implemented software.

Examples of responsibility:

Level 2: Creating detailed designs for individual software components

Level 3: Creating software designs for a standalone project or a well-defined part of a collaborative project.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 2 Create designs for software components.</p>	<ul style="list-style-type: none"> • creating detailed designs for software components • following relevant organisational software development procedures. 	<ul style="list-style-type: none"> • the content of specified organisational software development procedures.
<p>Level 3 Create designs for software</p>	<ul style="list-style-type: none"> • interpreting requirements definitions • creating software detailed designs and technical architectures • defining runtime environments • following relevant organisational software development procedures. 	<ul style="list-style-type: none"> • the content of specified organisational software development procedures • the contents of relevant types of requirements definition • required content of software designs • relevant parts of the organisational strategy for software design and technical architecture • the functionality and capability of specified runtime environments.

Level 2 – Software development – design 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit.

- 1. Creating detailed designs for software components**
 - 2. Following relevant organisational software development procedures**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The content of specified organisational software development procedures** These should cover the following main areas:
 - creating detailed designs, software components and documentation
 - testing and installing software.
-

Assessment Guidance

The two or more tasks you complete for this unit should result in the production of designs for single software components. The procedures you follow should relate to software component development, but you must have knowledge of the procedures relating to other processes as outlined in the Knowledge requirements.

How do I demonstrate Knowledge?

The knowledge requirement covers the whole process of software production, not just the design phase. One reason for this is that it is not good practice to produce a design that, for some reason, cannot be converted into a software component because the procedures will not allow it. You may well have been made aware of these procedures, and will probably have direct access to them. Your assessor is likely to need to discuss them with you and may give you some oral and/or written questions to answer. This will be backed up by the evidence produced during the actual assessment tasks.

How can I satisfy the skills and techniques part?

The skills and techniques requirements are satisfied simply by creating two or more properly documented software component designs that can be used to create useful, working software components. It is likely that you will be working towards one of

the other software design units, so the design could be proved by actually producing the component itself. If that is not an option then the design would have to be examined and assessed in its own right. You should document the process fully to show that software development procedures have been followed. You may be asked to explain various aspects of the completed design.

Summary

Achievement of this unit recognises skill in producing workable designs for single software components usually for inclusion in a larger piece of software. It shows that you can function effectively in this part of the software development process.

Level 3 – Software development – design 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit.

- 1. Interpreting requirements definitions**
- 2. Creating software detailed designs and technical architectures**
- 3. Defining runtime environments** - 'Runtime environment' is a definition of the system required for the created software to operate as intended. (This may be totally distinct from the development environment used to create the software.)
 - software (e.g. operating system, API etc.)
 - hardware (e.g. processor, available disk or memory storage, peripherals etc.)
- 4. Following relevant organisational software development procedures**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The content of specified organisational software development procedures** - These should cover the following main areas:
 - creating outline designs
 - creating detailed designs, software components and documentation
 - testing and installing software
 - specifying runtime environments
- 2. The contents of relevant types of requirements definitions**
- 3. Required content of software designs** - These describe and specify the software to be created and how it will be tested:
 - Outline designs:**
 - data (e.g. entities, attributes and relationships)
 - functionality (e.g. inputs, processes and outputs)
 - capacity (e.g. processing, storage and access)
 - Runtime environment:**
 - hardware and software

- 4. Relevant parts of the organisational strategy for software design and technical architecture**
 - 5. The functionality and capability of specified runtime environments** -'Runtime environment' is a definition of the system required for the created software to operate as intended. (This may be totally distinct from the development environment used to create the software.)
-

Assessment Guidance

The three or more tasks you complete for this unit should result in the production of detailed designs technical architectures for items of software. You should read carefully the introduction to this unit where it describes the concept of a software component and indicates the kind of work and environment that would apply to this unit. The procedures you follow should relate to software component development, but you must have knowledge of the procedures relating to other processes as outlined in the Knowledge requirements.

How do I demonstrate Knowledge?

The knowledge requirement covers the whole process of software production, not just the design phase. One reason for this is that it is not good practice to produce a design that, for some reason, cannot be converted into a working software application because the procedures will not allow it. You should have been made aware of these procedures, and will probably have direct access to them. Your assessor is likely to need to conduct a professional discussion with you to explore your knowledge and understanding of the issues, and may also give you some oral and/or written questions to answer. This will be backed up by the evidence produced during the actual assessment tasks.

How can I satisfy the skills and techniques part?

The three or more tasks that you use for assessment must be substantial and complex, in other words they must not consist of a few lines of script that will perform a simple operation when run in a particular environment. You should start from the detailed requirements definitions – exactly what the proposed software is required to do, and work through the design process, properly documenting your progress, as is good practice in any design work. You should be able to justify any decisions that you make with regard to the designs, technical architecture and run-time environments you should also be able to show that you have followed all of the relevant development procedures. The end result that your assessor should be presented with will be a series of well documented software designs, together with their original requirements definitions and any supporting evidence such as witness statements as might be required.

Summary

Achievement of this unit recognises skill in producing workable designs for substantial items of software that are either stand-alone or part of a larger, well-defined project. It shows that you can function effectively in this part of the software development process to produce complex work following pre-determined processes and procedures.

Software installation and upgrade – levels 1, 2 and 3

This is the ability to install or upgrade software on any ICT system following agreed processes.

It includes:

- preparation and planning
- installation or upgrade and
- configuration and handover to the customer.

The software installation/upgrade target can be any system capable of running software which can be interactively installed or upgraded. Examples include base stations, switches and hubs, control systems and mobile, desktop and server computers. The software concerned must be applicable to Information Technology equipment and systems, and the tasks must use a wide range of different types of software and methods.

You are likely to be in a job role that requires you to work on Information Technology operating systems and software applications.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
Level 1 Carry out installations or upgrades under detailed instruction	<ul style="list-style-type: none"> • following specified installation/upgrade procedures • using specified software loading facilities • recording specified information connected with the installation/upgrade. 	<ul style="list-style-type: none"> • specified parts of the installation/upgrade process.
Level 2 Carry out a range of installations or upgrades under instruction.	<ul style="list-style-type: none"> • following relevant installation/upgrade procedures • using appropriate software loading facilities • recording relevant information • communicating the progress and outcome of the installation/upgrade to the appropriate people. 	<ul style="list-style-type: none"> • relevant parts of the installation/upgrade process • relevant software loading facilities.
Level 3 Plan and carry out or control a wide range of installations or upgrades.	<ul style="list-style-type: none"> • providing guidance on installation/upgrade procedures to immediate colleagues • obtaining and allocating required materials • selecting installation/upgrade procedures to be followed • selecting software loading facilities to be used. 	<ul style="list-style-type: none"> • the installation/upgrade process • the capabilities of available software loading facilities.

Level 1 – Software installation and upgrade 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** straightforward tasks to demonstrate your competence in:

- 1. Following specified installation/upgrade procedures -** the procedures to be followed when carrying out installations or upgrades. The following are examples of the type of procedures which will be required:
 - installation, configuration and testing
 - delivery, shipping and storage
 - escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality

- 2. Using specified software loading facilities eg:**
 - CD/DVD drive
 - tape
 - network install
 - download from remote server

- 3. Recording specified information connected with the installation/upgrade eg:**
 - product keys
 - licence details
 - version numbers
 - configuration settings
 - installation dates

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. Specified parts of the installation/upgrade process -** the actions, activities and information which are required to control software installation and upgrade eg:
 - installation/upgrade procedures to be followed
 - procedures for information recording

Assessment Guidance

You will need to produce at least two straightforward tasks, demonstrating skills, techniques and knowledge outlined in the

unit. The tasks should be different in content and between them they should cover as much of the unit requirements as possible

How do I demonstrate Knowledge?

You will need to demonstrate knowledge of the particular procedures you are required to follow, and the methods of loading the software that you need to use. You can show this knowledge by answering oral or written questions put by your assessor, or perhaps just by performing the installation and upgrade assessment tasks, which your assessor would observe.

How can I satisfy the skills and techniques part?

You will need to choose at least two different, straightforward tasks – one could be an installation of an application from a CD-ROM, the other could be the installation of anti-virus software downloaded from the Internet. You should make sure that the sum of these tasks covers all aspects of your current job role, and requires all of the skills and techniques mentioned above. You should work from specific instructions and follow closely any procedures that are required. Evidence for the tasks might be installation logs, job sheets or observation by assessor or expert witness.

Summary

Successful completion of this unit will recognise your ability to carry out routine software installations and upgrades, using a small range of installation methods, following specific procedures – a valuable part of the skill set for a competent IT Practitioner.

Level 2 – Software installation and upgrade 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least two comprehensive tasks to demonstrate your competence in:

- 1. Following relevant installation/upgrade procedures -** the procedures to be followed when carrying out installations or upgrades. The following are examples of the type of procedures which will be required:
 - installation, configuration and testing
 - delivery, shipping and storage
 - escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality
 - customer acceptance
 - product registration
 - data integrity
 - back-out
- 2. Using appropriate software loading facilities eg:**
 - CD/DVD drive
 - tape
 - network install
 - download from remote server
- 3. Recording relevant information eg:**
 - product keys
 - licence details
 - version numbers
 - configuration settings
 - installation dates
- 4. Communicating the progress and outcome of the installation/upgrade to the appropriate people**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. Relevant parts of the installation/upgrade process -** the actions, activities and information which are required to control software installation and upgrade eg:
 - installation/upgrade procedures to be followed
 - procedures for information recording

- software storage locations to be used
- specifications of the software

2. Relevant software loading facilities eg:

- CD/DVD drive
 - tape
 - network install
 - download from remote server
-

Assessment Guidance

You will need to produce at least two comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. The tasks should be different in content and between them they should cover as much of the unit requirements as possible

How do I demonstrate Knowledge?

You will need to demonstrate knowledge of the particular procedures you are required to follow, and the possible methods of loading the software. Here, you should demonstrate a wider knowledge of the possible methods you might be asked to use, but are not currently available to you. This knowledge can be evidenced using your answers to relevant tests and exams, or by oral questioning, professional discussion or natural occurrence.

How can I satisfy the skills and techniques part?

You will need to choose at least two different, substantial tasks – one could be a network install of a new database application, the other could be the installation of anti-virus software downloaded from the Internet. You should make sure that the sum of these tasks covers all aspects of your current job role, and requires all of the skills and techniques mentioned above. Evidence for the tasks might be installation logs, job sheets or observation by assessor or expert witness.

Summary

Successful completion of this unit will recognise your ability to carry out routine software installations and upgrades, using a variety of installation methods, following standard procedures – a valuable part of the skill set for a competent IT Practitioner.

Skills and Techniques

For this unit you must demonstrate the following skills and techniques by carrying out at least **THREE** substantial, complex and different software installation and upgrade tasks that are typical of your job in Information Technology:

- 1. Providing guidance on installation/upgrade procedures to immediate colleagues** - the procedures to be followed when carrying out installations or upgrades. The following are examples of the type of procedures which will be required:
 - installation, configuration and testing
 - delivery, shipping and storage
 - escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality
 - customer acceptance
 - product registration
 - data integrity
 - back-up
- 2. Obtaining and allocating the required materials**
- 3. Selecting installation/upgrade procedures to be followed**
- 4. Selecting and using appropriate software loading facilities eg:**
 - CD/DVD drive
 - tape
 - network install
 - download from remote server
- 5. Configuring installed or upgraded software**
- 6. Handing over installed or upgraded software to the customer**
- 7. Recording relevant information eg:**
 - product keys
 - licence details
 - version numbers
 - configuration settings
 - installation dates
- 8. Communicating the progress and outcome of the installation/upgrade to the appropriate people**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

1. The installation/upgrade process - the actions, activities and information which are required to control software installation and upgrade eg:

- installation/upgrade procedures to be followed
- procedures for information recording
- software storage locations to be used
- specifications of the software
- planning
- resource allocation
- contractual requirements

2. The capabilities of available software loading facilities

eg:

- CD/DVD drive
 - Internet download
 - network install
-

Assessment Guidance

The three or more tasks associated with this unit must cover all of the headings under skills and techniques, and the content must be related to Information Technology. In other words the software must be used to control, configure or enable the use of Information Technology. At this level, you are expected to make decisions about the installation methods, plan the installation process and carry out or control the installation, hand over the software and create the appropriate records

How do I demonstrate Knowledge?

Some of the knowledge required for this unit is generic and evidence could be obtained from the results of tests and examinations taken as part of training courses. However, some of the knowledge will be specific to the system you are working on and should be demonstrated during the assessment tasks. Your assessor may want to do some additional questioning or a professional discussion to complete the assessment.

How can I satisfy the skills and techniques part?

The tasks that you do for this unit need to cover a wide range of methods and situations. It is important to remember that you must do the planning, resourcing and selection of methods and procedures. It is not sufficient to take a set of detailed instructions from your supervisor and simply do the installation. You must show that you have at least played a significant role in planning and defining a substantial software rollout in each case, taking responsibility for the procedures, methods used and for

the outcome. You must also show that you have properly handed over the software to the customer, demonstrating and explaining where necessary.

Summary

The successful completion of this unit recognises your ability to plan and execute rollouts of a range of new and upgraded software, using different methods and procedures. It also recognises your ability to advise colleagues on installation issues and to explain and demonstrate software to a customer.

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System management – levels 2 and 3

This is the ability to manage ICT systems to ensure that they deliver the required functionality and capacity. A system can be any combination of equipment, hardware and software.

System Management will involve changing system configuration to meet short-term fluctuations in demand (e.g. high numbers of calls to specific telephone numbers). It will also involve longer-term changes such as increasing resources (e.g. processing or storage capacity) to meet anticipated needs, taking account of advances in technology.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. The system concerned must be an IT system, although it may incorporate some communication technology e.g. for data transfer using satellite, terrestrial microwave transmission etc. The system management actions must affect multiple users.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 2 Assist in administering a system</p>	<ul style="list-style-type: none"> • making specified changes to system configuration • gathering and recording ICT asset and configuration information for specified items. 	<ul style="list-style-type: none"> • how to use specified system configuration facilities • what ICT asset and configuration information is to be recorded.
<p>Level 3 Administer a system.</p>	<ul style="list-style-type: none"> • selecting configuration options to optimise system functionality and capacity • making changes to system configuration. • specifying items for which ICT asset and configuration information is to be recorded. 	<ul style="list-style-type: none"> • how available options for system configuration affect functionality and capacity • how to configure the system • ICT asset and configuration information applicable to the system.

Level 2 – System management 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** comprehensive tasks where the configuration changes affect multiple users to demonstrate your competence in:

- 1. Making specified changes to system configuration** e.g.:
 - adjusting loads in different parts of the system to reduce bottlenecks
 - making adjustments to reduce error rates in data transmission
 - re-allocating networked peripherals to balance load
- 2. Making changes to system configuration** e.g.:
 - physical and logical addresses
 - setting options
 - connections
- 3. Gathering and recording ICT asset and configuration information** (see Knowledge 2.)

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. How to use specified system configuration facilities**
- 2. What ICT asset and configuration information is to be recorded** - information on the assets making up a system. This will include physical attributes and logical configurations eg:
 - a **Physical attributes** e.g.
 - manufacturer
 - type
 - revision
 - serial number
 - location
 - value)
 - b **Configuration** e.g.
 - physical and logical addresses
 - options set
 - connections
- 3. How advances in technology affect systems already in use** e.g.

- improvements to the function and capacity of existing technologies

Assessment Guidance

This unit is about the day-to-day management of a working communication system and the specific actions you are required to take to ensure it maintains optimum performance. It is important that you show that you can carry out specific changes to the system accurately

How do I demonstrate Knowledge?

The knowledge evidence for this unit, because it is mainly system-specific, should come from your system training and from the tasks you carry out for assessment.

How can I satisfy the skills and techniques part?

The tasks that you carry out for this unit must be substantial and complex; they should have the potential to have far-reaching effect within the system and affect multiple users. A task might involve, for instance, altering the trigger level of traffic loading on part of a data transmission system where traffic is automatically switched to another part of the system, to maintain balance in the system. You would first need to show that you have understood the specific instructions for the change(s). This might be done by confirming your understanding with the system manager, who would then act as an expert witness to provide assessment evidence. Then you would need to execute the change and satisfy yourself that it had worked. You would then need create the necessary records. A further example might be the failure of part of a system, without the facility for an immediate fix. You might be instructed to re-configure the system to balance the load and cope with the traffic until the failed system component could be fixed.

Summary

Successful completion of this unit recognises your ability to implement appropriate options for system configurations affecting multiple users, and record them in a timely and accurate way.

Level 3 – System management 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **THREE** substantial and complex tasks where the configuration changes will affect multiple users to demonstrate your competence in:

- 1. Selecting configuration options to optimise system functionality and capacity** e.g.:
 - adjusting loads in different parts of the system to reduce bottlenecks
 - making adjustments to reduce error rates in data transmission
 - re-allocating network ed peripherals to balance load
 - 2. Making changes to system configuration**
 - 3. Specifying items for which ICT asset and configuration information is to be recorded**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. How available options for system configuration affect functionality and capacity**
 - 2. How to configure the system**
 - 3. ICT asset and configuration information applicable to the system** - information on the assets making up a system. This will include physical attributes and logical configurations eg:
 - Physical attributes (e.g. manufacturer, type, revision, serial number, location, value)
 - Configuration (e.g. physical and logical addresses, options set, connections)
 - 4. Advances in Technology**
 - directly relevant to systems already in use
-

Assessment Guidance

This unit is about the day-to-day management of a working communication system and the actions you take to ensure it is properly configured to maintain the required performance. It is important that you show that you can make decisions about

configuration issues as well as actually carry out the required changes.

How do I demonstrate Knowledge?

The knowledge evidence for this unit, because it is mainly system-specific, should come from your system training and from the tasks you carry out for assessment.

How can I satisfy the skills and techniques part?

The tasks that you carry out for this unit must be substantial and complex; they should have the potential to have far-reaching effect within the system and affect multiple users. A task might involve, for instance, altering the trigger level of traffic loading on part of a data transmission system where traffic is automatically switched to another part of the system, to maintain balance in the system. You would need to show that you have identified the need for the change, decided what the change should be and knew what the consequences would be if it did not work. Then you would need to execute the change and satisfy yourself that it had worked. You would then need to decide what records were needed and create them appropriately. A further example might be the failure of part of a system, without the facility for an immediate fix. You might have to re-configure the system to balance the load and cope with the traffic until the failed system component could be fixed.

Summary

Successful completion of this unit recognises your ability to select appropriate options for system configurations affecting multiple users, and to implement them in a timely and accurate way.

System operation – levels 1, 2 and 3

This is the ability to operate and monitor a system, which can be any combination of equipment, hardware and software.

This may include:

- using data backup and restore routines
- handling of incidents
- controlling and monitoring availability and performance of system components
- start-up/close-down routines
- scheduling routine or preventative maintenance
- maintenance of operating plans and schedules.

Examples of 'operational activities' are:

- replenishment of consumables
- routine or preventative maintenance
- data backups.

You are likely to be in a job role that requires you to operate IT systems under close supervision, either in an operational or testing situation.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Operate a system under direct instruction</p>	<ul style="list-style-type: none"> • operating parts of the system following specified procedures • identifying and reporting system faults • recording specified operational information. • assessing and minimising risks related to own actions. 	<ul style="list-style-type: none"> • specified operating procedures • how to operate specified parts of the system • functionality of specified parts of the system • how to recognise system faults.
<p>Level 2 Operate a system under instruction.</p>	<ul style="list-style-type: none"> • operating specified system parts following procedures • identifying system faults • resolving or escalating system faults • gathering and recording specified operational information • assessing and minimising risks related to own actions. 	<ul style="list-style-type: none"> • relevant parts of operating procedures • how to operate specified parts of the system • functionality of relevant parts of the system • how to recognise common system faults • how to resolve common system faults.
<p>Level 3 Maintain and implement system operating procedures.</p>	<ul style="list-style-type: none"> • operating the system following procedures • providing advice and guidance on system operation to immediate colleagues • selecting the procedures to be followed • scheduling operational activities to minimise disruption to system functionality • identifying system faults • resolving or escalating system faults • collating operational information • assessing and minimising risks. 	<ul style="list-style-type: none"> • what operating procedures are applicable to the system • how to operate the system • system functionality during normal operation • effects of operational activities on system functionality • how to recognise and resolve system faults.

Level 1 – System operation 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** straightforward tasks to demonstrate your competence in:

- 1. Operating specified system parts, following procedures**
- 2. Identifying and reporting system faults**
- 3. Recording specified operational information**
- 4. Assessing and minimising risks related to own actions -** these are risks other than to Health and Safety which can arise as a direct consequence of carrying out work activities on hardware and equipment - eg:
 - loss or corruption of data
 - loss of service
 - damage to equipment

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

- 1. Specified operating procedures** eg:
 - required service levels (e.g. availability, quality)
 - routine maintenance
 - monitoring
 - data integrity (e.g. backups, anti-virus)
 - consumables use, storage and disposal
 - Health and Safety
 - escalation
 - information recording and reporting
 - obtaining work permissions
 - security and confidentiality
- 2. How to operate specified parts of the system** eg:
 - network management/monitoring
 - network server/web server/workstation
 - computerised control for other systems
 - Data backup equipment (eg tape drive, CD/DVD drive)
- 3. Functionality of relevant parts of the system**
- 4. How to recognise system faults**

Assessment Guidance

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit.

When put together the tasks should represent all of the relevant skills in your job role, and cover all of the requirements of the unit. You are only required to operate parts of a system where that is appropriate – for instance, perhaps you might operate a workstation on a large network, or a commercial networked printer

How do I demonstrate Knowledge?

Much of the knowledge requirement is organisation and system-specific. Much of the required knowledge should come out as part of the practical tasks, but you will need to demonstrate your knowledge of your particular system(s) and the way that your particular organisation requires you to operate them. This might be done as part of your training programme or could be achieved using written or oral questions or a professional discussion.

How can I satisfy the skills and techniques part?

The tasks you will use for assessment will depend very much on the system concerned. They might involve operating the same part of the system on two different occasions in different modes, or they might include more than one different type of system. The important thing is that you operate the system properly and follow procedures, you recognise and report problems, you record operational data, and lastly you operate the system with minimum risk to it and its contents (e.g. data). This should include start-up and close down routines, although these may have to be assessed in a realistic work environment for operational reasons.

Summary

Successful completion of this unit recognises that you are able to competently operate specific parts of Information Technology systems using laid down procedures, and that you can recognise routine problems while safeguarding the system and its data.

Level 2 – System operation 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** comprehensive tasks to demonstrate your competence in:

- 1. Operating specified system parts, following procedures**
- 2. Identifying system faults**
- 3. Resolving or escalating system faults**
- 4. Gathering and recording specified operational information**
- 5. Assessing and minimising risks related to own actions -** these are risks other than to Health and Safety which can arise as a direct consequence of carrying out work activities on hardware and equipment - eg:
 - loss or corruption of data
 - loss of service
 - damage to equipment

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

- 1. Relevant parts of operating procedures** eg:
 - required service levels (e.g. availability, quality)
 - routine maintenance
 - monitoring
 - data integrity (e.g. backups, anti-virus)
 - consumables use, storage and disposal
 - Health and Safety
 - escalation
 - information recording and reporting
 - obtaining work permissions
 - security and confidentiality
- 2. How to operate specified parts of the system** eg:
 - network management/monitoring
 - network server/web server/workstation
 - computerised control for other systems
 - Data backup equipment (eg tape drive, CD/DVD drive)
- 3. Functionality of relevant parts of the system**

4. How to recognise common system faults

5. How to resolve common system faults

Assessment Guidance

You will need to produce at least two comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit.

When put together the tasks should represent all of the relevant skills in your job role, and cover all of the requirements of the unit

How do I demonstrate Knowledge?

Much of the knowledge requirement is organisation and system-specific. Much of the required knowledge should come out as part of the practical tasks, but you will need to demonstrate your knowledge of your particular system(s) and the way that your particular organisation requires you to operate them. This might be done as part of your training programme or could be achieved using written or oral questions or a professional discussion.

How can I satisfy the skills and techniques part?

The tasks you will use for assessment will depend very much on the system concerned. They might involve operating the same system on two different occasions in different modes, or they might include more than one different type of system. The important thing is that you operate the system properly and follow procedures, you recognise and deal with problems, you gather and record operational data, and lastly you operate the system with minimum risk to it and its contents (e.g. data). This should include start-up and close down routines, although these may have to be assessed in a realistic work environment for operational reasons.

Summary

Successful completion of this unit recognises that you are able to competently operate specific Information Technology systems using laid down procedures, and that you can deal with routine problems while safeguarding the system and its data.

Level 3 – System operation 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **THREE** substantial and complex tasks to demonstrate your competence in:

- 1. Operating the system following procedures**
- 2. Providing advice and guidance on system operation to immediate colleagues**
- 3. Selecting the procedures to be followed**
- 4. Scheduling operational activities to minimise disruption to system functionality**
- 5. Identifying system faults**
- 6. Resolving or escalating system faults**
- 7. Collating operational information**
- 8. Assessing and minimising risks** - these are risks other than to Health and Safety which can arise as a direct consequence of carrying out work activities on hardware and equipment eg:
 - loss or corruption of data
 - loss of service
 - damage to equipment
 - effects on customer operations

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. What operating procedures are applicable to the system** eg:
 - required service levels (e.g. availability, quality)
 - routine maintenance
 - monitoring
 - data integrity (e.g. backups, anti-virus)
 - consumables use, storage and disposal
 - Health and Safety
 - escalation
 - information recording and reporting
 - obtaining work permissions

- security and confidentiality
2. **How to operate the system** eg:
 - corporate communications system
 - LAN
 - WAN
 - Multi-subscriber video-conferencing
 - Satellite data link
 3. **System functionality during normal operation**
 4. **Effects of operational activities on system functionality**
 5. **How to recognise and resolve system faults**
-

Assessment Guidance

The three or more tasks you carry out for this unit must cover, between them, all of the skills and techniques headings. The issues you deal with during those tasks must be **complex**, in other words they must have a significant effect on the system as a whole and require a level of technical knowledge and expertise above that expected of a more junior system operator

How do I demonstrate Knowledge?

The knowledge required for this unit is very system –specific, so you will be able to provide evidence from your system training and from the tasks you complete for your assessment. Any gaps can be filled in by your assessor during professional discussion and by oral or written questioning

How can I satisfy the skills and techniques part?

If you are operating a complex system in a level 3 capacity, then, over a period of time you will be required to carry out tasks of sufficient variety and complexity to satisfy the requirements of this unit. You must beware, however, of using the simpler, more routine tasks as your main evidence, although they can be used as supporting evidence. You must be able to show that you have more knowledge and experience than would be expected of more junior colleagues and that you are able to pass on knowledge and advice to immediate colleagues.

Summary

The successful completion of this unit recognises that you are able to take responsibility for, and carry out, the vast majority of operating and maintenance tasks on a complex IT system, recognising faults and dealing with them appropriately.

Technical advice and guidance – levels 1, 2 and 3

This is the ability to identify a need for technical advice or guidance, and to provide accurate information in a controlled process.

Advice and guidance in the context of information Technology, will normally relate to the provision of technical information in order to resolve problems or to improve performance. Customers are defined as any person or organisation in need of technical advice.

In order to provide effective advice it may be necessary to research and validate information.

You will be in a job role where you will be required to routinely provide information and advice to others e.g. colleagues, customers etc. You may not initially have that information but you will be required to obtain it from approved sources.

You should note that this unit is not designed for a technical sales environment where individuals might be given a standard script or a set of technical specifications.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Provide advice and guidance under direction.</p>	<ul style="list-style-type: none"> • identifying advice and guidance required by the customer • gathering information from approved sources • communicating and recording the information in a defined format within constraints • complying with organisational policy for providing information. 	<ul style="list-style-type: none"> • relevant parts of organisational policy for providing information • technical information to form the basis for advice and guidance.
<p>Level 2 Provide advice and guidance under the supervision or direction of others.</p>	<ul style="list-style-type: none"> • using appropriate methods of gathering information • reviewing information obtained to provide advice and guidance • communicating information in an agreed format within constraints • complying with organisational policy for providing information. 	<ul style="list-style-type: none"> • the purpose for which advice and guidance will be required • organisational policy for providing information • effects of advances in technology • technical information to form the basis for advice and guidance.
<p>Level 3 Provide advice and guidance on a range of topics, with responsibility for the source and content.</p>	<ul style="list-style-type: none"> • using appropriate methods of gathering information • analysing information to provide advice and guidance • ensuring that advice and guidance is communicated in appropriate formats within constraints • complying with organisational policy for providing advice and guidance. 	<ul style="list-style-type: none"> • appropriate uses of the advice and guidance • organisational policy for providing advice and guidance • effects of advances in technology • technical information to form the basis for advice and guidance.

Level 1 – Technical advice and guidance 1

Skills and Techniques

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. There should be technical content relating to Information Technology within each task:

- 1. Identifying advice and guidance required by the customer:**
 - responding to a direct request, not normally requiring research (e.g. known problems)
 - requiring minimal interpretation of information.
- 2. Gathering information from approved sources** such as reference manuals, knowledge repositories, historical data, customer and peer meetings; trade journals; training courses:
 - accurately gathering specified information
- 3. Communicating and recording the information in a defined format within constraints:**
 - direct contact with the customer
 - communicating using a suitable agreed format
 - identifying the correct person to receive the information
 - record, audit and quality check the information at the time of communication
 - agreeing that the information is sufficient to satisfy the customer request
 - following organisational escalation processes when the information is not suitable

The information may also be constrained by intellectual property rights, trademarks, copyright, freedom of information or data protection:

 - identifying and escalating customer requests for information that fall outside of the defined organisational policy or regulatory controls
- 4. Complying with organisational policy for providing information.**

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. Relevant parts of organisational policy for providing information**

2. Technical information to form the basis for advice and guidance.

Technical knowledge defines the type of information that is used to provide advice and guidance. It will refer to technical information covering products and services. The knowledge may include specifications, features, maintenance procedures, life cycle management and value:

- obtained from clearly defined information sources (e.g. operator manuals; handbooks; reference charts; normally referring to a single event).

Assessment Guidance

You will need to produce at least two straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. The content must be related to Information Technology and must be technical in nature. Providing advice and guidance may or may not be the main part of your job. If you work in a help-desk environment, then evidence should be easy to come by; you might, however, be a member of a technical team where opportunities might be more limited.

How do I demonstrate Knowledge?

Some of the knowledge requirements will be demonstrated during the practical tasks, but it is likely that your assessor will want to assess your wider knowledge of this particular activity. You will need to show a good knowledge of the types of information source available, which ones you should and should not use and why. You will also need to show an understanding of your organisation's policy towards giving guidance and advice. The detail of this will often be very specific to your organisation and will depend on a number of factors. Your assessor might want to discuss this with you or perhaps ask you to answer some written or oral questions. This is an important aspect of working in a commercial, technical environment and you will need to demonstrate very clearly that you understand the requirements, dangers and constraints.

How can I satisfy the skills and techniques part?

Each of the tasks should be different in technical content and should ideally use differing sources and methods of obtaining information. Contact with the customer (this includes colleagues in your organisation) should be direct, i.e. a two way communication using voice, instant messaging, or even signing where you and/or the customer is deaf. The tasking should be very clear as to what information, advice and guidance is required and for what purpose. The content should be straightforward, for instance it could involve giving a customer specific information to resolve a common problem, where the information has been provided for you as a standard job resource. The total coverage of the tasks should be fully representative of your job and should include all of the skills and knowledge requirements

Summary

The successful completion of this unit recognises your ability to use your technical knowledge and expertise to help others to resolve problems and improve performance in their Information Technology systems.

Level 2 – Technical advice and guidance 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. There should be technical content relating to Information Technology within each task:

- 1. Using appropriate methods of gathering technical information** from sources such as reference manuals, knowledge repositories, historical data, customer and peer meetings; trade journals; training courses:
 - accurately gathering specified information
 - gathering information likely to be relevant to meeting the request for information
 - using approved sources of information
 - identifying the information relevant to meeting the request for information
 - validating information

- 2. Reviewing information obtained to provide advice and guidance** (i.e.: Technical information or advice and guidance provided to others. It may be provided pro-actively or in response to a request):
 - responding to a direct request, not normally requiring research (e.g. known problems), requiring minimal interpretation of information
 - responding to a request that will require some information gathering and review;
 - considering different responses to a request;
 - identifying customer needs and time constraints
 - using direct and indirect methods, normally verbal, but with limited requirement to provide simple written information or guidelines.

- 3. Communicating information in an agreed format within constraints:**
 - communicating using a suitable agreed format
 - identifying the correct person to receive the information
 - record, audit and quality check the information at the time of communication
 - agreeing that the information is sufficient to satisfy the customer request
 - following organisational escalation processes when the information is not suitable
 - preparing customer documentation to recognised quality standards.
 - external written communications reviewed by supervisor
 - informing customers of progress The supply of information will be subject to constraints. Examples are:

commercial confidentiality, regulatory, personal sensitivity, legal, cost, technically inappropriate/feasible, availability, time, security.

The information may also be constrained by intellectual property rights, trademarks, copyright, freedom of information or data protection:

- identifying and escalating customer requests for information that fall outside of the defined organisational policy or regulatory controls
- discussing advantages or disadvantages of the use of the advice or guidance

4. Complying with organisational policy for providing information.

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

1. The purpose for which advice and guidance will be required eg:

- to assist a user to operate a system
- to enable a technician to locate a fault
- to enable an installer to locate and connect equipment
- to enable a sales person to advise a potential customer

2. Organisational policy for providing information

3. Effects of advances in technology directly relevant to systems already in use.

Advances in technology can result in eg:

- improvements to the function and capacity of existing technologies;
- new or radically different (emerging) technologies enabling new ways of working.

4. Technical information to form the basis for advice and guidance.

Technical knowledge defines the type of information that is used to provide advice and guidance. It will refer to technical information covering products and services. The knowledge may include specifications, features, maintenance procedures, life cycle management and value:

- obtained from approved sources (e.g. training courses knowledge repositories; discussion groups)
 - analysis of content for suitability
 - validation to confirm that the information is approved, current and within organisational policies
-

Assessment Guidance

You will need to produce at least two comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. The content must be related to Information Technology and must be technical in nature. Providing advice and guidance may or may not be the main part of your job. If you work in a help-desk environment, then evidence should be easy to come by; you might, however, be a member of a technical team where opportunities might be more limited.

How do I demonstrate Knowledge?

Some of the knowledge requirements will be demonstrated during the practical tasks, but it is likely that your assessor will want to assess your wider knowledge of this particular activity. You will need to show a good knowledge of the types of information source available, which ones you should and should not use and why. You will also need to show an understanding of your organisation's policy towards giving guidance and advice. The detail of this will often be very specific to your organisation and will depend on a number of factors. Your assessor might want to use professional discussion or written or oral questioning. This is an important aspect of working in a commercial, technical environment and you will need to demonstrate very clearly that you understand the requirements, dangers and constraints.

How can I satisfy the skills and techniques part?

Each of the tasks should be different in technical content and should ideally use differing sources and methods of obtaining information. The tasking should be very clear as to what information, advice and guidance is required and for what purpose. The content should be comprehensive, for instance it could involve giving a customer two or three options to resolve their problem or to meet their technical needs, and you might have to explain the options, consequences and perhaps give an informed opinion. An example could be a customer wanting to use Information Technology, incorporating a wireless network in a hazardous environment such as a chemical plant. You might be asked to research the safety requirements and identify products that would be safe to use. The total coverage of the tasks should be fully representative of your job and should include all of the skills and knowledge requirements

Summary

The successful completion of this unit recognises your ability to use your technical knowledge and expertise to help others to resolve problems and improve performance in their Information Technology systems.

Level 3 – Technical advice and guidance 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit. There should be technical content relating to Information Technology within each task:

- 1. Using appropriate methods of gathering technical information** from sources such as reference manuals, knowledge repositories, historical data, customer and peer meetings; trade journals; training courses:
 - identifying relevant sources of information
 - accurately gathering specified information
 - gathering information likely to be relevant to meeting the request for information
 - using approved sources of information
 - identifying the information relevant to meeting the request for information
 - validating information

- 2. Analysing information obtained to provide advice and guidance** (ie: Technical information or advice and guidance provided to others. It may be provided pro-actively or in response to a request):
 - responding to a direct request, not normally requiring research (e.g. known problems), requiring minimal interpretation of information
 - responding to a request that will require some information gathering and review
 - responding pro-actively to identified customer needs
 - identifying the purpose of the advice
 - considering different responses to a request
 - identifying customer needs and time constraints
 - identifying information to be gathered
 - using analysis techniques
 - selecting an appropriate response to meet customer needs
 - using direct and indirect methods, normally verbal, but with limited requirement to provide simple written information or guidelines

- 3. Ensuring that advice and guidance is communicated in appropriate formats within constraints:**
 - communicating using a suitable agreed format
 - identifying the correct person to receive the information
 - record, audit and quality check the information at the time of communication
 - agreeing that the information is sufficient to satisfy the customer request

- following organisational escalation processes when the information is not suitable
- preparing customer documentation to recognised quality standards
- external written communications reviewed by supervisor
- informing customers of progress
- using mechanisms such as e-mail; newsletters; technical bulletins and presentations to groups
- explaining complex concepts or information in a simple format

The supply of information will be subject to constraints. Examples are: commercial confidentiality, regulatory, personal sensitivity, legal, cost, technically inappropriate/feasible, availability, time, security.

The information may also be constrained by intellectual property rights, trademarks, copyright, freedom of information or data protection:

- identifying and escalating customer requests for information that fall outside of the defined organisational policy or regulatory controls
- discussing advantages or disadvantages of the use of the advice or guidance
- recommending occasions where organisational policies should be suspended or adapted
- interpreting constraints

4. Complying with organisational policy for providing information.

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

1. The appropriate uses of advice and guidance eg:

- to assist a user to operate a system
- to enable a technician to locate a fault
- to enable an installer to locate and connect equipment
- to enable a sales person to advise a potential customer

2. Organisational policy for providing advice and guidance

3. Effects of advances in technology directly relevant to systems already in use.

Advances in technology can result in eg:

- improvements to the function and capacity of existing technologies
- new or radically different (emerging) technologies enabling new ways of working.

4. Technical information to form the basis for advice and guidance.

Technical knowledge defines the type of information that is used to provide advice and guidance. It will refer to technical information covering products and services. The knowledge may include specifications, features, maintenance procedures, life cycle management and value:

- obtained from approved sources (e.g. training courses; knowledge repositories; discussion groups)
 - analysis of content for suitability
 - validation to confirm that the information is approved, current and within organisational policies
 - information obtained from a range of sources (e.g. historical data)
 - information derived from the analysis of a range of information (e.g. trend analysis)
-

Assessment Guidance

You will need to produce at least three substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit. The content must be related to Information Technology and must be technical in nature. Providing advice and guidance may or may not be the main part of your job. If you work in a help-desk environment, then evidence should be easy to come by; you might, however, be a member or leader of a technical team where opportunities might be more limited. You also need to show that you take some responsibility for ensuring that other people keep within guidelines and constraints when giving advice and guidance.

How do I demonstrate Knowledge?

Some of the knowledge requirements will be demonstrated during the practical tasks, but it is likely that your assessor will want to assess your wider knowledge of this particular activity. You will need to show a good knowledge of the types of information source available, which ones you should and should not use and why. You will also need to show an understanding of your organisation's policy towards giving advice, guidance and advice. The detail of this will often be very specific to your organisation and will depend on a number of factors. Your assessor might want to use professional discussion or written or oral questioning. This is an important aspect of working in a commercial, technical environment and you will need to demonstrate very clearly that you understand the requirements, dangers and constraints.

How can I satisfy the skills and techniques part?

Each of the tasks should be different in technical content and should ideally use differing sources and methods of obtaining information. The tasking should be very clear as to what the aim of the advice and guidance is – you should then use a variety of sources of your choice to obtain the most current and valid information. The content should be complex, for instance you

and your colleagues might be having problems operating, configuring or repairing a particular Information Technology system; you might have been tasked with sourcing complex information and passing on advice to your colleagues. Or you might have a request from a customer for advice on using a complex piece of Information Technology for an unusual and complex task. The total coverage of the assessment tasks should be fully representative of your job and should include all of the skills and knowledge requirements

Summary

The successful completion of this unit recognises your ability to use your technical knowledge and expertise to help others to resolve problems and improve performance in their IT systems, to source and select information from many sources, and to support others in this role.

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Technical fault diagnosis – levels 1, 2 and 3

This is the ability to apply processes and techniques designed to diagnose the causes of faults within a technical context. In most situations this will be followed by the identification of an appropriate remedy for the identified fault (see Technical Fault Remedy Selection unit).

Faults in the context of IT and Telecommunications, normally relate to the failure of a system or equipment to act according to normal operating specifications. Faults can be manifested as complete or intermittent failures to operate; erratic or irregular operation; or operation below specified capacity.

Technical faults can be typically categorised into the following levels:

Level 1: Be routine in nature; have apparent symptoms; have a limited range of causes.

Level 2: Be intermittent; be service affecting or have some customer impact; require limited information gathering; require routine use of diagnostic methods and tests.

Level 3: Require gathering a range of information; require extended use of diagnostic methods and tests; have non-specific symptoms; from failures in systems or equipment with multiple inputs; be severely service affecting or have significant customer impact.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. Work must be carried out on Information Technology, which might be used to control or interface with communication equipment. However, the use of the equipment concerned must be primarily for Information Technology.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Assist in the diagnosis of faults following detailed instructions.</p>	<ul style="list-style-type: none"> • using specified diagnostic tools • recording specified information connected with the diagnosis. 	<ul style="list-style-type: none"> • relevant parts of the diagnostic process. • specified technical information.
<p>Level 2 Diagnose faults with a known range of causes and assist in the diagnosis of other faults.</p>	<ul style="list-style-type: none"> • using appropriate diagnostic tools • gathering and recording relevant information to support the diagnosis. • analysing information to identify the cause of faults 	<ul style="list-style-type: none"> • diagnostic methods • the purposes for which diagnostic information is required • the diagnostic process to be followed. • technical information on a specified range of products.
<p>Level 3 Diagnose faults with a wide range of causes and assist others in the diagnostic process.</p>	<ul style="list-style-type: none"> • providing guidance to immediate colleagues on fault diagnosis • gathering, recording and analysing diagnostic information • selecting and adapting relevant diagnostic tools. 	<ul style="list-style-type: none"> • appropriate uses of diagnostic methods • the purposes for which diagnostic information is required • the diagnostic process to be followed. • detailed technical information on a range of products.

Level 1 – Technical fault diagnosis 1

Skills and Techniques

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. They should be carried out on Information Technology equipment and systems, although IT related communications such as wireless networking could be included, so long as the fault relates to its interface with IT equipment and not purely to its function in transmitting and receiving signals:

1. Using specified diagnostic tools, i.e.: any device, equipment or software used to assist the diagnosis of faults. These will be specific to the context of the fault being diagnosed. Examples could be:

- electrical/electronic test instruments
- on-board self-test programs
- loop back devices
- on-line/remote monitoring software
- diagnostic software

for the purposes of:

- assisting with diagnosing following detailed instructions

2. Recording specified information connected with the diagnosis – accurately gathering and recording specified information from sources such as:

- taking measurements
- observing and recording system performance
- interviewing relevant persons
- obtaining technical specifications and fault history

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

1. Relevant parts of the diagnostic process - a sequence of actions to be followed to systematically carry out fault diagnosis. It will include methods and tools to be used, information to be recorded and recording systems eg:

- diagnostic tools to be used
- procedures to be followed
- procedures for information recording
- individual responsibility and authority
- escalation procedure

2. Technical information on a specified range of products.

Assessment Guidance

You will need to carry out at least **TWO** straightforward fault-finding tasks on Information Technology equipment or systems, during which you will use all of the types of skills and techniques detailed above. These tasks should be different and in total be representative of your normal job. You will be operating in a support role assisting more senior colleagues in the diagnosis of system faults; nevertheless, you should demonstrate the full range of methods relevant to your job.

How do I demonstrate Knowledge?

The knowledge requirements for this unit are quite straightforward and are designed to emphasise the fact that, although a lot of fault finding is instinctive, there are procedures and techniques available to enable a timely and accurate diagnosis to be made. During the information gathering tasks you will have the opportunity to show this knowledge – you should document what you do and/or make sure that you explain your methods to your assessor or expert witness.

Your assessor may be able to use additional evidence from tests or exams taken during training; your assessor might also want to explore your knowledge further in a discussion or a question and answer session.

How can I satisfy the skills and techniques part?

Your role in the fault finding process will be one of supporting and assisting more experienced colleagues by gathering information about the fault using a range of tools. You should show that you can use these tools accurately and safely to obtain the information required by the colleague who will be diagnosing the fault. It goes without saying that this information must be current, accurate and complete and properly presented so that it can be easily interpreted and used. The process that you go through should be part of a systematic diagnosis process and not just used to justify some intuitive guesswork.

Summary

The successful completion of this unit recognises that you can use appropriate diagnostic tools to gather and present specified information related to faults in Information Technology systems and equipment to assist in the diagnosis process. It is a valuable indication to employers that you can use the methods efficiently so as to keep downtime to a minimum.

Level 2 – Technical fault diagnosis 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. They should be carried out on Information Technology equipment and systems, although IT related communications such as wireless networking could be included, so long as the fault relates to its interface with IT equipment and not purely to its function in transmitting and receiving signals:

- 1. Using appropriate diagnostic tools**, i.e.: any device, equipment or software used to assist the diagnosis of faults. These will be specific to the context of the fault being diagnosed. Examples could be:
 - electrical/electronic test instruments
 - on-board self-test programs
 - loop back devices
 - on-line/remote monitoring software
 - diagnostic software**for the purposes of:**
 - carrying out routine diagnosing
 - assisting in other more complex situations

- 2. Gathering and recording relevant information to support the diagnosis**, from sources such as:
 - taking measurements
 - observing and recording system performance
 - interviewing relevant persons
 - obtaining technical specifications and fault history**by:**
 - identifying the relevant information
 - accessing approved sources of information
 - validating information

- 3. Analysing information to identify the cause of faults** - using a logical, systematic approach to identify the root cause of faults from the gathered information eg:
 - approaches such as gap analysis, identification of cause and effect, flow charts
 - possible ways to prevent the reoccurrence of the fault

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

- 1. Diagnostic methods** – The different types of actions which can be taken to aid diagnosis of faults eg:

- substitution
- replication
- testing
- environment change

2. The purposes for which diagnostic information is required eg:

- Purposes -**
 - fault diagnosis
 - fault rectification and prevention
- Diagnostic information** - Information related to the problem being diagnosed and the process of diagnosis eg:
 - problem description
 - problem history
 - problem location
 - product specifications
 - time and expense records
 - any parts used
 - actions taken and outcome

3. The diagnostic process to be followed - a sequence of actions to be followed to systematically carry out fault diagnosis. It will include methods and tools to be used, information to be recorded and recording systems eg:

- diagnostic tools to be used
- procedures to be followed
- procedures for information recording
- individual responsibility and authority
- escalation procedure
- information gathering
- information analysis
- solution identification
- fault validation
- how to minimise service disruption during diagnostics
- level of service

4. Technical information on a specified range of products.

Assessment Guidance

You will need to carry out at least two comprehensive fault-finding tasks on Information Technology equipment or systems, during which you will use all of the types of skills and techniques detailed above. These tasks should be different and in total be representative of your normal job.

How do I demonstrate Knowledge?

The knowledge requirements for this unit are quite comprehensive and are designed to emphasise the fact that, although a lot of fault finding is instinctive, there are procedures and techniques available to you to make sure your decision is

timely and accurate. During the fault finding tasks you will have the opportunity to show this knowledge – you should document what you do and/or make sure that you explain your methods and reasoning to your assessor or expert witness.

Your assessor may be able to use additional evidence from tests or exams taken during training; your assessor might also want to explore your knowledge further in a professional discussion or a question and answer session.

How can I satisfy the skills and techniques part?

You should take careful note of the skills and techniques requirements for this unit. You will see that intuitive faultfinding and guesswork are not included. While the former has its place, the purpose of this unit is to assess your competence in using structured methods that involve gathering information, perhaps using test equipment, and analysing the results using sound technical knowledge. If you find yourself looking at some fault symptoms and thinking 'I know what is causing that', then you should probably not use that fault as evidence.

It would help, just for the purposes of this unit, to write down the steps you propose to take in diagnosing a particular fault, the appropriate test hardware and software, and what results you would expect to see. For instance, you might be working on a workstation base unit that has an intermittent fault and decide that the ambient temperature had some effect. You might then decide to change the local ambient temperature by using a freezer spray on selected components. The resultant changes in performance might indicate the presence of a problem component. The evidence from each of the fault finding tasks must contain at least the information gathering and analysis steps – there must also be examples of you using the diagnostic tools normally available to you in your job within the whole body of evidence.

Summary

The successful completion of this unit recognises that you can use appropriate diagnostic tools in a structured way to locate faults in Information Technology systems and equipment, as opposed to using intuition or guesswork. It is a valuable indication to employers that you can use the methods efficiently so as to keep downtime to a minimum.

Level 3 – Technical fault diagnosis 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit. Each task must be carried out on communication equipment or systems:

1. Providing guidance to immediate colleagues on fault diagnosis**2. Gathering, recording and analysing diagnostic information** from sources such as:

- taking measurements
- observing and recording system performance
- interviewing relevant persons
- obtaining technical specifications and fault history

by:

- identifying the relevant information
- identifying relevant sources of information
- accessing approved sources of information
- validating information

and analysing - using a logical, systematic approach to identify the root cause of faults from the gathered information eg:

- approaches such as gap analysis, identification of cause and effect, flow charts
- possible ways to prevent the reoccurrence of the fault
- approaches such as trend analysis, what-if scenarios

3. Selecting and adapting relevant diagnostic tools, i.e.: any device, equipment or software used to assist the diagnosis of faults. These will be specific to the context of the fault being diagnosed. Examples could be:

- electrical/electronic test instruments
- on-board self-test programs
- loop back devices
- on-line/remote monitoring software
- diagnostic software

for the purposes of:

- carrying out routine diagnosing
 - assisting in other more complex situations
 - carrying out diagnosing and supporting others in the process
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

1. **Appropriate uses of diagnostic methods** – The different types of actions which can be taken to aid diagnosis of faults and when they should be applied eg:
 - substitution
 - replication
 - testing
 - environment change

2. **The purposes for which diagnostic information is required** eg:
 - a **Purposes** -
 - fault diagnosis
 - fault rectification and prevention
 - resource allocation
 - trend analysis
 - financial
 - b **Diagnostic information** - Information related to the problem being diagnosed and the process of diagnosis eg:
 - problem description
 - problem history
 - problem location
 - product specifications
 - time and expense records
 - any parts used
 - actions taken and outcome

3. **The diagnostic process to be followed** - a sequence of actions to be followed to systematically carry out fault diagnosis. It will include methods and tools to be used, information to be recorded and recording systems eg:
 - diagnostic tools to be used
 - procedures to be followed
 - procedures for information recording
 - individual responsibility and authority
 - escalation procedure
 - information gathering
 - information analysis
 - solution identification
 - fault validation
 - how to minimise service disruption during diagnostics
 - service level agreements

4. **Detailed technical information on a range of products**

Assessment Guidance

The faults being diagnosed in these assessment tasks must “require gathering a range of information; require extended use of diagnostic methods and tests; have non-specific symptoms; from failures in systems or equipment with multiple inputs.” The assessor should also judge them to be or have the potential to be severely service-affecting or have significant customer impact. The judgement of potential would be appropriate in the case of, for example, a candidate working in a repair facility that might be somewhat removed from the operational environment and who may not be aware of any impact of the failures being dealt with.

The three or more substantial and complex tasks you complete for assessment must comply with the above criteria.

How do I demonstrate Knowledge?

The knowledge required for this unit is substantial – much of it will be system-specific, but you will need to show a comprehensive knowledge of fault finding principles and diagnostic techniques. You may well have completed both general and specialist training that could be used as knowledge evidence, and you could also use task evidence and professional discussion.

How can I satisfy the skills and techniques part?

As indicated above, you will need to choose carefully the tasks that you use for assessment purposes. Not every task that you deal with at work will be of sufficient complexity to satisfy the criteria. When you do encounter a fault that is suitable, you should document the process thoroughly and include your thought processes, your possible options as to methods and diagnostic tools, and the expected and actual results of any tests carried out. The symptoms and circumstances should be clearly stated, along with the results and conclusions of the diagnostic process. You should use a range of diagnostic tools and methods in the different tasks, and, of course, each fault should be substantially different.

Summary

The successful completion of this unit recognises the fact that you have the technical knowledge, expertise and confidence to diagnose complex and very significant faults in a substantial IT system. It also recognises that you have sufficient knowledge and experience to pass on advice and on fault diagnosis to others.

Technical fault remedy selection – levels 1, 2 and 3

The process of identifying the most appropriate remedies for identified technical faults. These will have been identified by a process of fault diagnosis (see Technical Fault Diagnosis Unit).

Remedy selection will involve consideration of potential remedies.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. Work must be carried out on Info Information Technology, which might be used to control or interface with communications such as wireless networking. However, the use of the equipment concerned must be primarily for Information Technology.

The unit is likely to be assessed in conjunction with Unit *** (Technical Fault Diagnosis) although the data from which fault remedy selection is made need not necessarily come from tasks assessed in that unit.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
Level 1 Identify known remedies for faults.	<ul style="list-style-type: none"> selecting and recording the most appropriate known remedy. 	<ul style="list-style-type: none"> faults for which there are known remedies.
Level 2 Identify fault remedies from specified alternatives	<ul style="list-style-type: none"> identifying suitable remedies from those specified selecting and recording the most appropriate remedy. 	<ul style="list-style-type: none"> the applicability of specified fault remedies relevant considerations when selecting fault remedies specified parts of organisational policy for fault rectification.
Level 3 Identify remedies for a range of faults	<ul style="list-style-type: none"> identifying suitable remedies from those available selecting and recording the most appropriate remedy for faults. 	<ul style="list-style-type: none"> the applicability of available fault remedies considerations when selecting fault remedies relevant parts of organisational policy for fault rectification.

Level 1 – Technical fault remedy selection 1

Skills and Techniques

You will need to produce at least **TWO** straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. They should be carried out on communications equipment and systems, although communications-related IT can be included:

1. Selecting and recording the most appropriate known remedy from e.g.:

- Quick reference guides produced for the purpose
 - Manufacturer's information on specific faults
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

1. Faults for which there are known remedies e.g. faults that have:

- recognisable symptoms that are attributable to that fault
 - established and accepted remedies that represent standard practice
-

Assessment Guidance

You will need to produce at least two straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit. The system or equipment concerned must be Information Technology, or associated IT equipment that has a direct impact on one or more communication systems.

How do I demonstrate Knowledge?

The knowledge requirement for this use is very much based upon your knowledge of the system(s) that you work on and the standard faults that occur on them. For instance if a workstation crashes, you will know that the likely remedy (at least at first) is to re-boot. The manufacturer of a commercial networked printer might have produced a list of common symptoms with their likely cause and remedies. The assessment of this unit is likely to be less practical than many others, since it involves making decisions from information already obtained. The knowledge evidence will therefore be contained either in the assessment evidence for the skills and techniques, in the results of tests and exams taken during training, or in the content of discussions with your assessor or expert witness.

How can I satisfy the skills and techniques part?

This unit is really a follow-on from Unit 121 (Technical Fault Diagnosis) in that it can use data from that unit. However, it might be that you are not required to do the testing, but instead to make the decision on the remedy and then perhaps to go out and fix the system. It is important therefore that the decisions you make are both recorded and justified by you, using your technical knowledge and the appropriate procedures and constraints. You should also record carefully the basis on which you made your decisions.

Summary

The successful completion of this unit recognises that you are able to use technical and procedural knowledge to make informed decisions about system fault remedies, and keeping down time to a minimum. It will form part of the qualification that will recognise your skill as a competent Information Technology Practitioner.

Level 2 – Technical fault remedy selection 2

Skills and Techniques

You will need to produce at least **TWO** comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. They should be carried out on communications equipment and systems; although communications-related IT can be included:

- 1. Identifying suitable remedies from those specified**
 - 2. Selecting and recording the most appropriate remedy**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding, **in the context of Information Technology**:

- 1. Faults for which there are known remedies**
 - 2. The applicability of specified fault remedies**
 - 3. Relevant considerations when selecting fault remedies -** things that need to be considered when choosing how to perform a repair, installation, integration etc. Choices might include replacement rather than repair; work-around rather than root cause fix.
Examples of considerations are:
 - business or service impact
 - resource and skill availability
 - ease of implementation
 - 4. Specified parts of organisational policy for fault rectification.**
-

Assessment Guidance

You will need to produce at least two comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit. The system or equipment concerned must be Information Technology, or associated IT equipment that has a direct impact on one or more communication systems.

How do I demonstrate Knowledge?

The knowledge requirement for this use is very much based upon two things. First of all, your technical knowledge of IT systems, and secondly your knowledge of the procedures you are required to follow and the general business and operational impact that certain fault remedies might have. The assessment of this unit is

likely to be less practical than many others, since it involves making decisions from information already obtained. The knowledge evidence will therefore be contained either in the assessment evidence for the skills and techniques, in the results of tests and exams taken during training, or in the content of professional discussions with your assessor or expert witness.

How can I satisfy the skills and techniques part?

This unit is really follow-on from Unit 221 (Technical Fault Diagnosis) in that it can use data from that unit. However, it might be that you are not required to do the testing, but instead to make the decision on the remedy and then perhaps to go out and fix the system. It is important therefore that the decisions you make are both recorded and justified by you, using your technical knowledge and the appropriate procedures and constraints. You should also record carefully the basis on which you made your decisions.

Summary

The successful completion of this unit recognises that you are able to use technical and procedural knowledge to make informed decisions about system fault remedies, and keeping down time to a minimum. It will form part of the qualification that will recognise your skill as a competent Information Technology Practitioner.

Level 3 – Technical fault remedy selection 3

Skills and Techniques

You will need to produce at least **THREE** substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit. The identification of remedies must be done using data and diagnoses from complex faults, which must be from one of the following categories:

- require gathering a range of information
- require extended use of diagnostic methods and tests
- have non-specific symptoms
- from failures in systems or equipment with multiple inputs
- be severely service affecting
- have significant customer impact.

- 1. Identifying suitable remedies from those available**
 - 2. Selecting and recording the most appropriate remedy for faults**
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Faults for which there are known remedies**
- 2. The applicability of available fault remedies**
- 3. Considerations when selecting fault remedies** - things which need to be considered when choosing how to perform a repair, installation, integration etc. Choices might include replacement rather than repair; work-around rather than root cause fix.

Examples of considerations are:

- business or service impact
- resource and skill availability
- ease of implementation
- cost effectiveness
- performance
- compatibility
- time
- permanence

- 4. Relevant parts of organisational policy for fault rectification**

Assessment Guidance

The faults you use for this unit could come from Unit 321 - Technical Fault Diagnosis, or you could select others that fit one of the categories detailed above.

How do I demonstrate Knowledge?

You will demonstrate some of the knowledge while doing the tasks, but your assessor will probably want to expand the evidence by using oral or written testimony, or professional discussion.

How can I satisfy the skills and techniques part?

You will need to select the results of a number of complex fault diagnoses that are representative of those that might occur on your system. You will then need to produce a detailed report of your remedy selection, detailing exactly what needs to be done and the consequences for the business, users etc. For instance you might have a geographically spread IT system where one major component has failed. The test and diagnosis has confirmed the failed component but there is no replacement currently. You might decide to do a temporary work-around, transferring the traffic to another part of the system pending the repair of the failed component. You would need to detail the way in which any connections should be changed, the order in which they should be done and the implications of doing so. Much of this information is implied when decisions are made in operational situations, but there would then not be sufficiently detailed evidence to prove that you made the recommendations based on all the facts. The recommendations must, therefore, for the purposes of this unit, be written and in detail, explaining the reasons and the risks attached to any course of action.

Summary

The successful completion of this unit recognises your ability to follow up a complex fault diagnosis (your own or someone else's) with comprehensive and detailed recommendations as to the remedy, based on a sound knowledge of the system and the business environment it is operating in.

Testing ICT systems – levels 1, 2 and 3

This is the ability to apply testing processes and techniques. It will include the use of appropriate tools to measure system performance against agreed specifications or standards. A system can be any combination of equipment, hardware or software.

Reasons for testing may include the identification of faults as part of a diagnosis process, or the evaluation of performance as part of system monitoring or a development process.

Typically the testing process will involve:

- Pre-test activities such as: identification of the purpose of testing, selection of test type, identification of test data or conditions and expected test results
- Preparation for testing such as: protecting system and data integrity, obtaining test tools, setting up the test environment
- Carrying out testing and recording test results. Using test tools
- Responding to the results of tests, and
- Where appropriate returning the system to operation.

Typically, testing would at:

Level 1: be carried out on single components, be routine in nature, have limited customer impact.

Level 2: be carried out on linked components, include the gathering of information, involve the selection of suitable tests and the analysis of test results

Level 3: be carried out on interdependent components, require gathering a range of information, involve modifying or defining testing processes and have significant customer impact

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. Work must be carried out on Information Technology, which might be used to control or interface with communications such as wireless networking. However, the use of the equipment concerned must be primarily for Information Technology.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
<p>Level 1 Assist testing under direction.</p>	<ul style="list-style-type: none"> • carrying out specified preparation and conclusion activities • using specified testing tools • recording specified test information and test results. 	<ul style="list-style-type: none"> • relevant parts of the testing process • the purposes of testing • specified test preparation and conclusion activities • specified technical information.
<p>Level 2 Carry out routine testing and assist in other testing</p>	<ul style="list-style-type: none"> • ensuring relevant preparation and conclusion activities have been carried out • using appropriate testing tools • gathering and recording relevant test information and test results • responding to test information and results. 	<ul style="list-style-type: none"> • the testing process to be followed • the purposes of testing • relevant test preparation and conclusion activities • technical information on a specified range of products.
<p>Level 3 Carry out testing and support others in the testing process</p>	<ul style="list-style-type: none"> • providing technical advice to support testing • selecting any necessary preparation and conclusion activities and ensuring that they have been completed • selecting, adapting and using appropriate testing tools • gathering, recording and responding to test information and results 	<ul style="list-style-type: none"> • the testing process to be followed • the purposes of testing • what test preparation and conclusion activities are necessary for specific tests • detailed technical information on a specified range of products.

Level 1 – Testing ICT systems 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least two straightforward tasks to demonstrate your competence in:

- 1. Carrying out specified preparation and conclusion activities** - see Knowledge 3 for examples
- 2. Using specified testing tools** - tools which may include any device, equipment or software to assist the testing process. These will be specific to the context being investigated eg:
 - electrical/electronic test instruments
 - on-board self-test programs
 - diagnostic software
- 3. Accurately recording specified test information and test results** - from sources such as:
 - taking measurements
 - observing and recording system performance
 - interviewing relevant persons
 - obtaining technical specifications and fault history

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. Relevant parts of the testing process** - a sequence of actions to be followed to systematically carry out testing which might include:
 - preparation
 - testing tools to be used
 - work procedures to be followed (including obtaining authorisations)
 - action to be taken when problems arise during the testing process
 - updating and informing relevant people during testing
 - procedures for recording information
- 2. The purposes of testing** eg:
 - checking functionality
 - obtaining performance information
- 3. Specified test preparation and conclusion activities** - these are the considerations which may require some actions to be taken before commencing work and after the work activity eg:

- a **Preparation**
 - Health and safety legislation and regulations
 - need to obtain work permissions
 - site access and security
- b **Conclusion**
 - Health and safety legislation and regulations
 - environmental legislation and regulations (e.g. disposal of materials)
 - work sign-off and reporting
 - site restoration

5. Specified technical information

Assessment Guidance

You will need to produce at least two straightforward tasks, demonstrating skills, techniques and knowledge outlined in the unit.

Each task should be different in content so as to demonstrate as many of your skills as possible. For instance, you might choose to test a network workstation for one of your tasks and a networked photocopier for the other. If you work with both hardware and software, your assessment tasks should contain examples of testing each. If you work in an equipment repair role, performance testing of a hard drive, laser printer or tape streamer might be appropriate. You will be expected to use methods and equipment specified from a standard range available to you following specified procedures

How do I demonstrate Knowledge?

Much of the required knowledge will be demonstrated during the assessment tasks, but your assessor may wish to test your wider knowledge, particularly the product technical information, Health and Safety etc. Most of this knowledge will have been taught during initial or on-going training, so evidence from end of course tests might be used, or your assessor might devise a set of oral or written questions to cover outstanding items

How can I satisfy the skills and techniques part?

Each assessment task, although straightforward, should have a specific, useful aim. **Demonstrating a series of un-connected testing techniques is not an acceptable method of providing evidence.** For example, a technician dealing with a reported fault in a domestic PC system with a wireless network and a broadband connection will need to use a variety of specified test equipment and software to fully test the performance of the installation and to locate faults. The tests carried out, with their results should be recorded, perhaps on a laptop, PDA or on a job sheet. In most cases, this would be normal practice, so additional evidence on the practical part of the task should not be necessary.

For some parts of the process such as preparation, interviewing relevant people to clarify symptoms etc., you may need to gather additional evidence, in the form of witness statements or other documents. You would also need further testimony from an expert witness, assessor etc. as to the task you were actually given and the test results you achieved.

Summary

The requirements of this unit are designed to reflect what a level 1 Information Technology Practitioner would normally be required to do in the course of their everyday work in a testing role. On successful completion and when combined with other, suitable units it will form part of the picture of a competent technician able to work professionally with IT

Level 2 – Testing ICT systems 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least two comprehensive tasks to demonstrate your competence in:

- 1. Ensuring relevant preparation and conclusion activities have been carried out** - see Knowledge 3 for examples
- 2. Using appropriate testing tools** - tools which may include any device, equipment or software to assist the testing process. These will be specific to the context being investigated eg:
 - electrical/electronic test instruments
 - on-board self-test programs
 - diagnostic software
 - loop-back devices
 - on-line/remote monitoring software
 - software debuggers
 - runtime analysers
- 3. Gathering and recording relevant test information and test results** - from sources such as:
 - taking measurements
 - observing and recording system performance
 - interviewing relevant persons
 - obtaining technical specifications and fault history**by:**
 - identifying the relevant information
 - accessing approved sources of information
 - validating information
- 4. Responding to test information and results** - Using a logical systematic approach to identify a problem or to evaluate performance. Typically this will cover:
 - interpreting error codes/messages
 - comparing with specifications
 - identifying of inconsistent data

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

- 1. The testing process to be followed** - a sequence of actions to be followed to systematically carry out testing which might include:
 - preparation

- testing tools to be used
- work procedures to be followed (including obtaining authorisations)
- action to be taken when problems arise during the testing process
- how to select tests and collect relevant and sufficient information for the test to be successful
- updating and informing relevant people during testing
- how to minimise service disruption during testing and avoid detrimental effects or changes to performance
- ways to configure tests
- how to record, maintain or restore configurations, data and functionality
- types of service level agreements, individual responsibility and authority, escalation procedures and risks associated with using a testing process
- procedures for recording information

2. The purposes of testing eg:

- checking functionality, obtaining performance information
- aiding the diagnostic process, comparing actual and expected performance

3. Relevant test preparation and conclusion activities -

these are the considerations which may require some actions to be taken before commencing work and after the work activity eg:

a **Preparation**

- Health and safety legislation and regulations
- need to obtain work permissions
- site access and security
- system or equipment integrity (e.g. ensuring network service continuity)
- data integrity (e.g. taking data backups before commencing work)
- resource availability
- level of service

b **Conclusion**

- Health and safety legislation and regulations
- environmental legislation and regulations (e.g. disposal of materials)
- work sign-off and reporting
- site restoration
- system and equipment integrity (e.g. restoring service)
- data integrity (e.g. restoring data backups as necessary)

4. Technical information on a specified range of products

Assessment Guidance

You will need to produce at least two comprehensive tasks, demonstrating skills, techniques and knowledge outlined in the unit.

Each task should be different in content so as to demonstrate as many of your skills as possible. For instance, you might choose to test a network workstation for one of your tasks and a networked photocopier for the other. If you work with both hardware and software, your assessment tasks should contain examples of testing each. If you work in an equipment repair role, performance testing of a hard drive, laser printer or tape streamer might be appropriate. You will be expected to choose from a standard range of tests and equipment available to you in order to do the job you have been given, and you should be in a position to plan the detail of the procedures you intend to follow.

How can I satisfy the skills and techniques part?

Each assessment task should be substantial and have a specific, useful aim. **Demonstrating a series of un-connected testing techniques is not an acceptable method of providing evidence.** For example, a technician dealing with a reported fault in a domestic PC system with a wireless network and a broadband connection will need to use a variety of test equipment and software to fully evaluate the performance of the installation and to locate faults. The tests carried out, expected and actual performance and results of analysis should be recorded, perhaps on a laptop, PDA or on a job sheet. In most cases, this would be normal practice, so additional evidence on the practical part of the task should not be necessary.

For some parts of the process such as preparation, interviewing relevant people to clarify symptoms etc., you may need to gather additional evidence, in the form of witness statements or other documents. You would also need further testimony from an expert witness, assessor etc. as to the task you were actually given and the outputs you achieved e.g.

- test results
- statement of performance
- declaration of 'no fault found'
- a conclusion that the system tested performed within acceptable limits.

How do I demonstrate Knowledge?

Much of the required knowledge will be demonstrated during the assessment tasks, but your assessor may wish to test your wider knowledge, particularly the product technical information, Health and Safety etc. Most of this knowledge will have been taught during initial or on-going training, so evidence from end of course tests might be used, or your assessor might devise a set of oral or written questions to cover outstanding items

Summary

The requirements of this unit are designed to reflect what a level 2 Information Technology Practitioner would normally be required to do in the course of their everyday work in a testing role. On successful completion and when combined with other, suitable units it will form part of the picture of a competent technician able to work professionally with IT

Level 3 – Testing ICT systems 3

Skills and Techniques

You will need to produce at least three substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit:

- 1. Selecting any necessary preparation and conclusion activities and ensuring they have been completed** - see Knowledge 3 for examples
- 2. Selecting, adapting and using appropriate testing tools** - tools which may include any device, equipment or software to assist the testing process. These will be specific to the context being investigated eg:
 - electrical/electronic test instruments
 - on-board self-test programs
 - diagnostic software
 - loop-back devices
 - on-line/remote monitoring software
 - software debuggers
 - runtime analysers
 - traffic analysers
- 3. Gathering and recording test information and results** - from sources such as:
 - taking measurements
 - observing and recording system performance
 - interviewing relevant persons
 - obtaining technical specifications and fault history**by:**
 - identifying the relevant information
 - identifying relevant sources of information
 - accessing approved sources of information
 - validating information
- 4. Responding to test information and results** - Using a logical systematic approach to identify a problem or to evaluate performance. Typically this will cover:
 - interpreting error codes/messages
 - comparing with specifications
 - identifying of inconsistent data
 - examining results from multiple tests or trend analysis
 - using analytical tools to extract information from test data

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding:

1. **The testing process to be followed** - a sequence of actions to be followed to systematically carry out testing which might include:
 - preparation
 - testing tools to be used
 - work procedures to be followed (including obtaining authorisations)
 - action to be taken when problems arise during the testing process
 - how to select tests and collect relevant and sufficient information for the test to be successful
 - updating and informing relevant people during testing
 - how to minimise service disruption during testing and avoid detrimental effects or changes to performance
 - ways to configure tests
 - how to record, maintain or restore configurations, data and functionality
 - types of service level agreements, individual responsibility and authority, escalation procedures and risks associated with using a testing process
 - procedures for recording information
 - service level agreements
 - information analysis
2. **The purposes of testing** eg:
 - checking functionality, obtaining performance information
 - aiding the diagnostic process, comparing actual and expected performance
 - performance analysis
3. **What test preparation and conclusion activities are necessary for specific tests** - these are the considerations which may require some actions to be taken before commencing work and after the work activity eg:
 - a **Preparation**
 - Health and safety legislation and regulations
 - need to obtain work permissions
 - site access and security
 - system or equipment integrity (e.g. ensuring network service continuity)
 - data integrity (e.g. taking data backups before commencing work)
 - resource availability
 - service level agreements

b **Conclusion**

- Health and safety legislation and regulations
- environmental legislation and regulations (e.g. disposal of materials)
- work sign-off and reporting
- site restoration
- system and equipment integrity (e.g. restoring service)
- data integrity (e.g. restoring data backups as necessary)

4. Detailed technical information on a specified range of products

Assessment Guidance

You will need to produce at least three substantial and complex tasks, demonstrating skills, techniques and knowledge outlined in the unit.

Each task should be different in content so as to demonstrate as many of your skills as possible. The systems you work with for the assessment tasks should consist of a number of **interdependent** components i.e. not merely linked together like a PC and a printer, but the performance of each component being dependent upon the configuration and loading of other components. An example of this might be an office or company network – LAN, WAN etc. The testing procedure, the reasons for it and its eventual outcomes should have a significant impact on the customer, for instance the Internet sales operation in a large retail organisation could be affected as opposed to one or two users being unable to print documents, but would have alternative facilities close by.

How can I satisfy the skills and techniques part?

Each assessment task should be substantial and have a specific, useful aim. **Demonstrating a series of un-connected testing techniques is not an acceptable method of providing evidence.** For example, an engineer dealing with a reported fault or performance problem in a commercial LAN would need to use a variety of test techniques and equipment and software to fully evaluate the performance of the system and to locate faults. The tests carried out, expected and actual performance and results of analysis should be recorded, perhaps on a laptop, PDA, job sheet or log file. In most cases, this would be normal practice, so additional evidence on the practical part of the task should not be necessary.

For some parts of the process such as preparation, interviewing relevant people to clarify symptoms etc., you may need to gather additional evidence, in the form of witness statements or other documents. You would also need further testimony from an expert witness, assessor etc. as to the task you were actually given and the outputs you achieved e.g.

- test results
- statement of performance
- declaration of 'no fault found'
- a conclusion that the system tested performed within acceptable limits.

Lastly, you should demonstrate the ability to give advice and guidance to others to support the testing process. For instance as a senior team member, or its leader, you might have to delegate certain testing tasks to less experienced colleagues. The advice and guidance given to them might be a good source of evidence, but it must be shown to be

- Accurate
- Sufficient
- Easy to understand
- Appropriate to the situation and person receiving it

How do I demonstrate Knowledge?

Much of the required knowledge will be demonstrated during the assessment tasks, but your assessor may wish to test your wider knowledge, particularly the product technical information, Health and Safety etc. Most of this knowledge will have been taught during initial or on-going training, so evidence from end of course tests might be used, or your assessor might devise a set of oral or written questions to cover outstanding items

Summary

The requirements of this unit are designed to reflect what a level 3 Information Technology Professional would normally be required to do in the course of their everyday work in a testing role. On successful completion and when combined with other, suitable units it will form part of the picture of a competent engineer able to work professionally with Information Technology systems.

User profile administration – levels 2 and 3

This is the ability to specify and configure user profiles.

This is an optional unit, which can be assessed either in the workplace or in a realistic working environment. Work must be carried out on Information Technology, which will often include some IT equipment. However, the use of that equipment must be primarily for communications e.g. data, voice, multimedia, etc.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
Level 2 Assist the administration of user profiles.	<ul style="list-style-type: none"> making specified changes to user profiles. 	<ul style="list-style-type: none"> how to make changes to user profiles.
Level 3 Administer user profiles.	<ul style="list-style-type: none"> specifying user profiles to meet individual requirements creating standard profiles for groups of users providing guidance on user profiles to immediate colleagues. 	<ul style="list-style-type: none"> how to create and edit user and standard profiles how user profiles affect access to system facilities organisational policy on user profiles.

Level 2 – User profile administration 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** comprehensive tasks to demonstrate your competence in:

1. Making specified changes to user profiles.

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. How to make changes to user profiles** – User Profiles are mechanisms by which user access to system facilities can be controlled. Typically these will include:
 - user identifier (eg. username)
 - password and related information (e.g. change frequency)
 - allowed system access (e.g. times, locations)
 - allowed access to facilities (e.g. data, software)
-

Assessment Guidance

This unit covers a very specific, but important area of communication system administration that can have a considerable impact on both security and system performance from a customer/user point of view. The two or more tasks that you complete for this unit should be comprehensive in that they should include multiple users with different requirements both in level and type of setting required.

How do I demonstrate Knowledge?

This will be done in the course of the practical assessment tasks. However, your assessor might wish to explore your knowledge of other methods available to you but not generally used.

How can I satisfy the skills and techniques part?

The only way to do this is to make changes to user profiles on a system. For instance you might be given a list of Information Technology users who require different access to a network, or who may be moving to a to a new work location or job role. Your task might be to locate each of the user profiles on the system, alter the settings and test the altered profiles. The important thing to remember is the requirement for the tasks to be comprehensive. This means the numbers of profiles involved should be significant, as should the number and type of changes within each profile

Summary

In this unit, you are required to show skill in accurately applying changes to user profiles on a communication system, to assist in the management of those profiles. While this might be seen as simple to do and of low importance, the consequences, both for the system and to a business, of getting it wrong are quite severe. An employer needs to be confident that the person altering user profiles can achieve 100% accuracy every time. Successful completion of this unit recognises that skill.

Level 3 – User profile administration 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **THREE** substantial and complex tasks to demonstrate your competence in:

- 1. Making specified changes to user profiles.**
- 2. Specifying user profiles to meet individual requirements**
- 3. Creating standard profiles for groups of users**
- 4. Providing guidance on user profiles to immediate colleagues** while not actually creating profiles or implementing changes, can give clear and accurate advice and guidance on procedures, processes, safeguards and other issues relating to user profiles

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. How to create and edit user and standard profiles**
- 2. How to make changes to user profiles** - mechanisms by which user access to system facilities can be controlled. Typically these will include:
 - user identifier (eg. username)
 - password and related information (e.g. change frequency)
 - allowed system access (e.g. times, locations)
 - allowed access to facilities (e.g. data, software)
- 3. How user profiles affect access to system facilities** - access to the facilities of an ICT system by users can be controlled. These facilities include:
 - shared resources (e.g. data storage, printers)
 - software
 - data
- 4. Organisational policy on user profiles**

Assessment Guidance

This unit covers a very specific, but important area of communication system administration that can have a considerable impact on both security and system performance from a customer/user point of view. The three or more tasks that you complete for this unit should be substantial and complex in that they should include multiple users with different requirements both in level and type of setting required; users should also be put in groups in some cases.

How do I demonstrate Knowledge?

This will be done in the course of the practical assessment tasks. However, your assessor might wish to explore your knowledge further by using professional discussion or written/oral questioning.

How can I satisfy the skills and techniques part?

You will need to cover each of the main headings in the skills and techniques requirement, for instance you might be given a list of telecommunications users who require different access to a network, or who may be converting to a new charge structure. Your task might be to examine the implications of those changes for the system, its integrity, function and capacity, and to design and specify new profiles for those users. Another task could be to rationalise the profiles of a large number of users by identifying groups using suitable criteria and then designing and implementing generic profiles for each group. The important thing to remember is the requirement for the tasks to be substantial and complex. This means the numbers of profiles involved should be significant, as should the number and type of changes within each profile. You might not actually implement the profiles in some cases, but you should show that you can give advice and guidance on them to your immediate colleagues

Summary

In this unit, you are required to show skill in designing and specifying user profiles, accurately applying changes to them on an Information Technology system, while understanding and considering the implications to the whole system.. While this might be seen as relatively simple to do and of low importance, the consequences, both for the system and to a business, of getting it wrong are quite severe. An employer needs to be confident that the person specifying and altering user profiles can achieve 100% accuracy every time. Successful completion of this unit recognises that skill.

Working with ICT hardware and equipment – levels 1, 2 and 3

This is the ability to work on hardware or equipment following plans and instructions in accordance with an agreed process. It includes:

- preparation and planning
- work activities including installing, repairing, maintaining and decommissioning and any related assembly, disassembly or inspection.
- commissioning or return to service and handover to the customer.

Hardware and equipment in the context of IT and Telecommunications can include: cables, PC boards, racks, rack mounted equipment, poles, masts, aerials, large computer systems. Work can be carried out on, for example: a single monitor or keyboard by a technical courier, single or networked systems or a telephone exchange by a team of technicians/ engineers.

Work activities could, for example, arise as part of: new installations, upgrades to existing systems, fault repairs or preventative maintenance.

This unit can be seen as the mainstay of any qualification involving practical work with Information Technology systems. It is an optional unit and can be assessed either in the workplace or in a realistic working environment; work must be carried out on IT systems and equipment.

The competent person can:	This will involve effective use of the following skills and techniques:	This will involve applying knowledge and understanding of:
Level 1 Carry out work under direction.	<ul style="list-style-type: none"> • using specified tools and techniques safely • following specified working procedures • recording specified information connected with work activities. 	<ul style="list-style-type: none"> • relevant parts of the working process. • how regulatory requirements affect own work
Level 2 Plan and carry out a range of work activities under direction.	<ul style="list-style-type: none"> • using appropriate tools and techniques safely • following relevant working procedures • obtaining specified resources • recording relevant information • communicating the progress and outcome of work to the appropriate people • assess and minimise risks related to work activities. 	<ul style="list-style-type: none"> • the working process • how regulatory requirements affect work activities.
Level 3 Plan and carry out or direct a wide range of work activities.	<ul style="list-style-type: none"> • providing technical advice to support working procedures • selecting, adapting and using relevant tools and techniques safely • obtaining and allocating required materials • provide support and advice in assessing and minimising risks related to work activities. 	<ul style="list-style-type: none"> • the working process • appropriate uses of tools and techniques • what regulatory requirements affect work activities and how they do so.

Level 1 – Working with ICT hardware and equipment 1

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** straightforward tasks to demonstrate your competence in:

- 1. Using specified tools and techniques safely**
- 2. Following relevant working procedures** - the procedures, set down by the organisation or legislation, to be followed when working on hardware or equipment. Examples of these are:
 - Health and Safety
 - quality
 - use of tools
 - configuration
 - testing; logistics
 - waste disposal
 - problem escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality
- 3. Recording relevant information** as required by the working procedures

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

- 1. Relevant parts of the working process** - information required and procedures to be followed when carrying out work on hardware and equipment. These will typically include:
 - tools and techniques to be used
 - procedures to be followed
 - procedures for information recording
- 2. How regulatory requirements affect own work** eg:
 - Health and Safety
 - Data Protection
 - Electromagnetic Compatibility (EMC)

Assessment Guidance

You will need to carry out at least **TWO** straightforward tasks on Information Technology equipment or systems, during which you will use all of the types of skills and techniques detailed above. These tasks should be different and in total be representative of your normal job.

The straightforward tasks used for this unit must be coherent tasks and not a demonstration of a series of unconnected skills

How do I demonstrate Knowledge?

Much of the knowledge evidence will come out during the course of the assessment tasks, but your assessor/expert witness might want to ask some questions or arrange a discussion to explore your knowledge of, for instance, regulatory issues such as EMC, Health and Safety or environmental control as it affects your work. If your work involves working for instance with underground cabling or working at height, where there are specific safety issues then there might be some additional emphasis on that. You do not have to know everything about the legal requirements, but you do need to know enough to be able to do your job.

How can I satisfy the skills and techniques part?

The tasks that you use for assessment should be straightforward and different, so as to cover as much as possible of your job role and to satisfy as many of the skills and knowledge requirements as possible. You will almost certainly be using some of these tasks for other units as well, so it makes sense to pick them carefully. You should document as much as you need to and make sure that your assessor or expert witness is aware of the skills you are using. In that way the best possible use can be made of evidence generated in each task.

Your assessor should then have the complete story of the task that you were given from the initial instructions and objectives, through the methods and skills used, to the final, successful outcome. Remember, at this level, you should be given clear instructions, all of the materials, parts and tools to do the job, and there should be someone readily available to refer to if you experience difficulties completing the task.

Summary

The successful completion of this unit recognises the fact that you can work competently and safely with Information Technology equipment, whatever your actual job role is. Combined with other units it will contribute to the picture of a competent Information Technology Practitioner.

Level 2 – Working with ICT hardware and equipment 2

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you carrying out at least **TWO** comprehensive tasks to demonstrate your competence in:

- 1. Using appropriate tools and techniques safely**
- 2. Following relevant working procedures** - the procedures, set down by the organisation or legislation, to be followed when working on hardware or equipment. Examples of these are:
 - Health and Safety
 - quality
 - use of tools
 - configuration
 - testing; logistics
 - waste disposal
 - problem escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality
 - customer acceptance
 - commissioning
 - product registration
- 2. Obtaining specified resources**
- 3. Recording relevant information**
- 4. Communicating the progress and outcome of work to the appropriate people**
- 5. Assess and minimise risks related to work activities** - these are risks other than to Health and Safety which can arise as a direct consequence of carrying out work activities on hardware and equipment eg:
 - loss or corruption of data
 - loss of service
 - damage to equipment

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

1. **The working process** - information required and procedures to be followed when carrying out work on hardware and equipment. These will typically include:
 - tools and techniques to be used
 - procedures to be followed
 - procedures for information recording
 - customer requirements
 - product specifications
 - planning own work

 2. **How regulatory requirements affect work activities** eg:
 - Health and Safety
 - Data Protection
 - Electromagnetic Compatibility (EMC)
-

Assessment Guidance

You will need to carry out at least two comprehensive tasks on Information Technology equipment or systems, during which you will use all of the types of skills and techniques detailed above. These tasks should be different and in total be representative of your normal job.

The comprehensive tasks used for this unit must be coherent tasks and not a demonstration of a series of unconnected skills

How do I demonstrate Knowledge?

Much of the knowledge evidence will come out during the course of the assessment tasks, but your assessor/expert witness might want to ask some questions or arrange a professional discussion to explore your knowledge of, for instance, regulatory issues such as EMC, Health and Safety or environmental control. If your work involves working with underground cabling or working at height, where there are specific safety issues then there might be some additional emphasis on that.

How can I satisfy the skills and techniques part?

The tasks that you use for assessment should be comprehensive and different, so as to cover as much as possible of your job role and to satisfy as many of the skills and knowledge requirements as possible. You will almost certainly be using some of these tasks for other units as well, so it makes sense to pick them carefully. You should document as much as you need to and make sure that your assessor or expert witness is aware of the skills you are using. In that way the best possible use can be made of evidence generated in each task.

You should also make sure that you communicate effectively with people who need to be aware of your work progress. Keep records of telephone calls made and of e-mails and face-to-face communications.

Your assessor should then have the complete story of the task that you were given from the initial instructions and objectives, through the methods and skills used, to the final, successful outcome.

Summary

The successful completion of this unit recognises the fact that you can work competently and safely with Information Technology equipment, whatever your actual job role is. Combined with other units it will contribute to the picture of a competent Information Technology Practitioner.

Level 3 – Working with ICT hardware and equipment 3

Skills and Techniques

For this unit you must demonstrate the following skills and techniques. This will involve you planning and carrying out or directing at least **THREE** substantial and complex tasks to demonstrate your competence in:

- 1. Selecting, adapting and using relevant tools and techniques safely**
 - 2. Obtaining and allocating required resources**
 - 3. Following and providing technical support and advice on working procedures** - the procedures, set down by the organisation or legislation, to be followed when working on hardware or equipment. Examples of these are:
 - Health and Safety
 - quality
 - use of tools
 - configuration
 - testing; logistics
 - waste disposal
 - problem escalation
 - information recording
 - obtaining work permissions
 - security and confidentiality
 - integration
 - customer acceptance
 - commissioning
 - product registration
 - 4. Recording relevant information**
 - 5. Communicating the progress and outcome of work to the appropriate people**
 - 6. Providing support and advice in assessing and minimising risks related to work activities** - these are risks other than to Health and Safety which can arise as a direct consequence of carrying out work activities on hardware and equipment eg:
 - loss or corruption of data
 - loss of service
 - damage to equipment
 - effects on customer operations
-

Knowledge and Understanding

For this unit you must demonstrate the following knowledge and understanding **in the context of Information Technology**:

1. **The working process** - information required and procedures to be followed when carrying out work on hardware and equipment. These will typically include:
 - tools and techniques to be used
 - procedures to be followed
 - procedures for information recording
 - customer requirements
 - product specifications
 - planning own work
 - work planning
 - resource allocation

2. **What regulatory requirements affect work activities** and how they do so eg:
 - Health and Safety
 - Data Protection
 - Electromagnetic Compatibility (EMC)

Assessment Guidance

You will need to carry out at least three substantial and complex tasks on Information Technology equipment or systems, during which you will use all of the types of skills and techniques detailed above. These tasks should be different and in total be representative of your normal job.

The comprehensive tasks used for this unit must be coherent tasks and not a demonstration of a series of unconnected skills

How do I demonstrate Knowledge?

Much of the knowledge evidence will come out during the course of the assessment tasks, but your assessor/expert witness might want to ask some questions or arrange a professional discussion to explore your knowledge of, for instance, regulatory issues such as EMC, Health and Safety or environmental control. If your work involves working with underground cabling or working at height, where there are specific safety issues then there might be some additional emphasis on that. You will need to have knowledge at a level required generally of a senior team member or a team leader.

How can I satisfy the skills and techniques part?

The tasks that you use for assessment should be substantial, complex and different, so as to cover as much as possible of your job role and to satisfy as many of the skills and knowledge

requirements as possible. You will almost certainly be using some of these tasks for other units as well, so it makes sense to pick them carefully. You should document as much as you need to and make sure that your assessor or expert witness is aware of the skills you are using. In that way the best possible use can be made of evidence generated in each task.

Note that the requirement is for you to plan and carry out **or** direct work of a substantial and complex nature. This means that you don't have to do all of the work yourself, but the parts of the task that you don't physically do you should be responsible for as a more experienced team member or a team leader. Note that this includes the providing support in the assessment of risk to the successful completion of the task, **other than** Health and Safety. The ability to do this will come directly from your experience in your job role.

You should also make sure that you communicate effectively with people who need to be aware of your work progress. Keep records of telephone calls made and of e-mails and face-to-face communications.

Your assessor should then have the complete story of the task that you were given from the initial instructions and objectives, through the methods and skills used, to the final, successful outcome.

Summary

The successful completion of this unit recognises the fact that you can plan tasks and carry out or direct work competently and safely on Information Technology equipment, whatever your actual job role is. Combined with other units it will contribute to the picture of a competent Information Technology Professional who is aware not only of the technical aspects of the job, but also the commercial implications.

Further information

Further information regarding centre/scheme approval or any aspect of assessment of the award should be referred to the relevant City & Guilds regional/national office:

Region	Telephone	Facsimile
City & Guilds London and South East	020 7294 8139	020 7294 2419
City & Guilds Southern	020 7294 2677	020 7294 2412
City & Guilds South West	01823 722200	01823 444231
City & Guilds East Anglia	01480 308300	01480 308325
City & Guilds East Midlands	01773 842900	01773 833030
City & Guilds West Midlands	0121 503 8900	0121 359 7734
City & Guilds North East	0191 402 5100	0191 402 5101
City & Guilds North West	01925 897900	01925 897925
City & Guilds Yorkshire	0113 380 8500	0113 380 8525
City & Guilds Northern Ireland	028 9032 5689	028 9031 2917
City & Guilds Scotland	0131 226 1556	0131 226 1558
City & Guilds Wales	02920 748600	02920 748625
City & Guilds Head Office – Customer Relations	020 7294 2800	020 7294 2400

Website <http://www.city-and-guilds.co.uk>

SP-02-4324