Higher National Unit specification: general information

Unit title: Managing a Desktop Operating System Deployment

Unit code: FK88 35

Superclass:	CA
Publication date:	April 2011
Source:	Scottish Qualifications Authority
Version:	01

Unit purpose

This Unit is designed to introduce candidates to planning, managing and deploying computer operating systems. It is intended for candidates undertaking an HN in Computing or a related area, who require a broad knowledge of operating system deployment and its control. Candidates should be able to design, manage and deploy operating systems using an optimal process. The deployed system images should include system and user settings including standard applications as well as standard security characteristics.

On completion of the Unit the candidate should be able to demonstrate:

1 Planning and managing a client life cycle strategy
2 Designing a standard deployment image
3 Designing client configurations
4 Designing an operating system client deployment
5 Designing packages for deployment

Recommended prior knowledge and skills

Access to this Unit will be at the discretion of the Centre. There are no specific requirements but candidates would benefit from knowledge of computer hardware and software. This may be demonstrated by the possession of Units such as DG0K 33 Hardware Concepts and/or DF9L 33 Operating System Concepts or DH33 34 Computer Operating Systems 1 and/or DM2X 35 Computer Operating Systems 2, DM35 34 Supporting Users and Troubleshooting a Desktop Operating System, DM34 34 Supporting Users and Troubleshooting Desktop Applications, FK89 34 Configuring a Desktop Operating System and FK8A 34 Troubleshooting a Desktop Operating System. Alternatively, candidates might provide evidence of informal prior learning or experience, or the achievement of commercially recognised qualifications.

Higher National Unit specification: general information (cont)

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Credit points and level

2 Higher National Unit credit(s) at SCQF level 8: (16 SCQF credit points at SCQF level 8*)

SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.

Core Skills

There may be opportunities to gather evidence towards core skills in this Unit, although there is no automatic certification of core skills or core skills components.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Assessment

Evidence for the knowledge and/or skills for the Unit must be produced using a set of 60 multiple-choice/multiple-response questions to assess candidates' capabilities. This should be administered as a single end-of-Unit test covering all Outcomes.

Candidates must answer at least 60% of the questions correctly in order to obtain a pass.

Testing must take place in a closed-book environment where candidates have no access to books, handouts, notes or other learning material. Testing can be done in either a machine-based or paper-based format and must be invigilated by a tutor or mentor. There must be no communication between candidates and communication with the invigilator must be restricted to matters relating to the administration of the test.

If a candidate requires to be re-assessed, a different selection of questions must be used from all sections. A significant proportion of the questions used in the re-assessment must be different from those used in the original test. Candidates must answer at least 60% of the re-assessment questions correctly in order in to obtain a pass.

Higher National Unit specification: statement of standards

Unit title: Managing a Desktop Operating System Deployment

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Please refer to *Knowledge and/or Skills for the Unit* and *Evidence Requirements for the Unit* after the Outcomes.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Planning and managing a client life cycle strategy.

Knowledge and/or Skills

♦   Planning and managing client licensing and anti-piracy systems.
♦   Planning and managing software updates.
♦   Planning and managing a physical hardware and virtualisation strategy.

Evidence Requirements

This assessment is carried out as an end-of-Unit test combining assessments for all Outcomes within the Unit. (See Outcome 5 for details)

Assessment Guidelines

The assessment guidelines are found in Outcome 5.

Outcome 2

Designing a standard deployment image.

Knowledge and/or Skills

♦   Designing an image creation strategy.
♦   Designing a custom image.
♦   Designing an image update strategy.

Evidence Requirements

This assessment is carried out as an end of Unit test combining assessments for all Outcomes within the Unit. (See Outcome 5 for details)

Higher National Unit specification: statement of standards (cont)

Unit title: Managing a Desktop Operating System Deployment

Assessment Guidelines

The assessment guidelines are found in Outcome 5.

Outcome 3

Designing client configurations.

Knowledge and/or Skills

- ♦ Designing standard system settings.
- ♦ Designing client security standards.
- ♦ Designing browser settings.

Evidence Requirements

This assessment is carried out as an end-of-Unit test combining assessments for all Outcomes within the Unit. (See Outcome 5 for details)

Assessment Guidelines

The assessment guidelines are found in Outcome 5.

Outcome 4

Designing an operating system client deployment.

Knowledge and/or Skills

- ♦ Analysing the environment and choosing appropriate deployment methods.
- ♦ Designing a minimal user involved deployment strategy.
- ♦ Designing a unattended deployment strategy.
- ♦ Designing a user state migration strategy.

Evidence Requirements

This assessment is carried out as an end-of-Unit test combining assessments for all Outcomes within the Unit. (See Outcome 5 for details)

Assessment Guidelines

The assessment guidelines are found in Outcome 5.

Higher National Unit specification: statement of standards (cont)

Unit title: Managing a Desktop Operating System Deployment

Outcome 5

Designing packages for deployment.

Knowledge and/or Skills

♦ Designing a delivery or deployment strategy.
♦ Managing application compatibility.

Evidence Requirements

The assessment for all Outcomes must be undertaken at the end of the Unit. The candidate capabilities will be examined by 60 multiple choice/multiple response questions with appropriate sampling of the complete Unit content. The sample must cover **all** Outcomes with a suitable selection of at least 50% of the Knowledge and Skills points listed for each of the Outcomes.

The assessment must be undertaken in supervised conditions and is closed book. A candidate must complete this assessment within two hours. Candidates may not bring to the assessment event any notes, textbooks, handouts or other material (calculators are allowed). The questions presented must significantly change on **each** assessment occasion.
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Assessment Guidelines

Testing can be done in either a machine-based or paper-based format and must be invigilated by a tutor or appropriate person. There must be no communication between candidates and communication with the invigilator must be restricted to matters relating to the administration of the test. Centres are recommended to create a coverage grid to highlight which questions cover which knowledge and skills bullet points to assist in the assessment process.

Higher National Unit specification: support notes

Unit title: Managing a Desktop Operating System Deployment

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 80 hours.

Guidance on the content and context for this Unit

This Unit should be delivered in a real world context throughout. Individual, class and group discussions should be used to enhance comprehension and learning. Practical demonstration of the tasks involved in the teaching of this Unit should be linked to real world situations wherever possible. It is important that any required concepts and terminology are discussed and presented in an appropriate context.

The intention is that a significant time is available within the delivery of this Unit to allow centres to develop candidates to the correct level prior to assessment. Formative assessments, tutorials and frequent revision should be used to this end all through the duration of this Unit delivery. Candidates should be encouraged to accept responsibility for their own learning by providing opportunities to present chosen topics to the class and to assist others within class in the context of desktop support technicians.

The most important overall emphasis should be on the relevance and currency of content in such a rapidly evolving field. It is recommended that Centres deliver this Unit within the context of modern operating systems using up to date processes and methods.

This Unit may assist in preparing for vendor certifications like Microsoft examination 70-686 Pro: Windows 7, Enterprise Desktop Administrator. Please see the separate credit transfer document which gives details of vendor certifications that will be accepted as assessment evidence. Vendor certifications can change rapidly and candidates should be encouraged to check current details at the relevant vendor web site to ensure all the objectives have been met. The Microsoft examination contributes towards the Microsoft Certified IT Professional Enterprise Desktop Administrator (MCITP: EDA) certification.

The Outcomes in this Unit have been written in a vendor-independent manner. There is no restriction placed on the operating system to be used and centres are free to choose alternative operating systems.

Guidance on the delivery and assessment of this Unit

This Unit is likely to form part of a group award which is primarily designed to provide candidates with the technical or professional knowledge and skills related to a specific occupational area. It is moderately technical in content and should not be adopted by group awards in other areas or delivered as a stand-alone Unit without careful consideration of its appropriateness.

Unit title: Managing a Desktop Operating System Deployment

It is a Unit which candidates are likely to find accessible at an introductory level. It is suggested that it be delivered only as part of an HN programme in Computing or a related area. It should be delivered in tandem with other Computing Units and opportunities for teaching and assessment integration explored.

To minimise assessment overhead, one set of closed-book multiple-choice/multiple-response questions is used to provide evidence of candidates' capabilities for all Outcomes. As well as reducing the time required for assessment and marking, these reduce the need for candidates to memorise details and encourages understanding. Candidates must meet the necessary threshold to gain a pass.

If a candidate requires to be re-assessed, a significant number of different questions must be used from all sections. The questions used in the re-assessment must be significantly different from those used in the original test. Candidates must meet the necessary threshold to gain a pass.

This Unit may assist in preparing for vendor certifications like the Microsoft Certified IT Professional Enterprise Desktop Administrator (MCITP: EDA). Please see the separate credit transfer document which gives details of vendor certifications that will be accepted as assessment evidence. Vendor certifications can change rapidly and candidates should be encouraged to check current details at the relevant vendor web site to ensure all the objectives have been met. The Microsoft examination contributes towards the Microsoft Certified IT Professional Enterprise Desktop Administrator (MCITP: EDA).

The content of this Unit may be delivered using vendor-supplied curricula. As these materials are under continuous development, centres should check the appropriate vendor web site to ensure that such materials meet all the requirements of for this Unit.

Outcome 1

The Outcome will involve the candidate in planning and managing client licensing and anti-piracy systems. This will include applications and operating systems; anti-piracy prevention, network based license control and prerequisites; choosing a licensing infrastructure and licensing compliance audits, inventory audits and checking virtualisation licensing considerations as well as making recommendations for licensing strategy and compliance. The candidate will be required to plan and manage updates such as application and operating system updates including evaluation and approval. The candidate will plan and manage enterprise applications as well as designing an update strategy and selecting update tools and schedules by taking into account network considerations, test updates and auditing for security compliance. The candidate will have to demonstrate the ability to plan and manage a physical hardware and virtualisation strategy by analysing the existing hardware environment and determining which systems meet minimum requirements. This will involve considering tradeoffs of physical against virtual desktop infrastructure environment, network load considerations; disk space; direct connection against brokered connection, determining a virtual hard drive strategy and selecting an appropriate system word size.

Higher National Unit specification: support notes (cont)

Unit title: Managing a Desktop Operating System Deployment

Outcome 2

For this Outcome the candidate will design an image creation strategy by identifying operating system and enterprise applications that will be included with the standard image as well as appropriate imaging strategies and processes. The candidate will need to consider image localisation within the standard system images. Next the candidate will design a custom image by identifying applications to be installed, identifying features and components to be enabled or disabled and testing the customised image. To meet the needs of the Outcome the candidate must define an image update strategy to include performance optimisation; security considerations, efficiency, offline servicing against online or post-image updates, re-creating or recapturing of images.

Outcome 3

The candidate will be asked to design standard system settings by choosing methods including logon and start-up scripts, policy application, designing profiles, designing error reporting and audit policy. The candidate will need to define client security standards such as application control policies, encryption, stopping unnecessary services, designing firewall rules, defining anti-malware settings, changes to logon methods, configuring user rights; defining user permissions policy, designing a security template for system lockdown, defining account policies and designing security standards for removable storage. The candidate will be required to define browser settings to facilitate safe Internet use including defining security settings cache location, branding, surfing mode, restricting or allowing plug-ins, add-ons, setting privacy policy and browser protection.

Outcome 4

Here the candidate will analyse the environment and choose appropriate deployment methods by building the infrastructure to take advantage of minimal user deployment against unattended deployment or a local install. The candidate will look at capacity and scale considerations and determining required changes to the infrastructure. Following on from that, the candidate will design a minimal user involved deployment strategy by considering unicast against multicast, auto-cast against scheduled-cast, staggered deployment, scheduling considerations, network load consequences, selecting a client boot method for deployment, unattended answer files, restricting who can receive images and choosing a delivery mechanism. The candidate has to design an unattended deployment strategy using the same considerations as that used for the minimal user deployment. This is followed by the candidate designing a user migration strategy by determining which user data and settings to preserve, considering local or remote storage considerations, determining a mitigation plan for non-migrated applications as well as securing migrated data and developing a testing method for the designed strategy. Consideration of a wipe-and-load migration against a side-by-side migration is required.

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Outcome 5

This Outcome will enable the candidate to design a delivery or deployment strategy involving auditing for prerequisites and minimum requirements, choosing a deployment method such as virtualised deployment, remote desktop deployment, a policy deployment, or a server-based or client-based deployment, software distribution, scheduling considerations, staggered deployment, network considerations, package creation standards. The candidate will manage application compatibility by testing for incompatibility and choosing a method for resolving the incompatibility such as upgrading or adjusting as identified from auditing incompatible software. The candidate will identify and resolve deployment and client configuration issues such as browser, policy, networking, authentication and authorisation concerns.

Opportunities for developing Core Skills

There may be opportunities to gather evidence towards core skills in this Unit, although there is no automatic certification of core skills or core skills components.

Open learning

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance.

A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes.

For further information and advice, please see Assessment and Quality Assurance for Open and Distance Learning (SQA, February 2001 – publication code A1030)

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**

History of changes to Unit

Version	Description of change	Date

General information for candidates

Unit title: Managing a Desktop Operating System Deployment

This Unit is designed to introduce candidates to planning, managing and deploying computer operating systems. It is intended for candidates undertaking an HN in Computing or a related area, who require a broad knowledge of operating system deployment. Candidates should be able to design, manage and deploy operating systems using an optimal process. The deployed system images should include system and user settings including standard applications as well as standard security characteristics.

On completion of the Unit you should be able to:

1   Planning and managing a client life cycle strategy
2   Designing a standard deployment image
3   Designing client configurations
4   Designing a operating system client deployment
5   Designing application packages for deployment

The first section will involve you in planning and managing client licensing and anti-piracy systems. This will include applications and operating systems; anti-piracy prevention, network based license control and prerequisites; choosing a licensing infrastructure and licensing compliance audits, inventory audits and checking virtualisation licensing considerations as well as making recommendations for licensing strategy and compliance. You will be required to plan and manage updates such as application and operating system updates including evaluation and approval. You will plan and manage enterprise applications as well as designing an update strategy and selecting update tools and schedules by taking into account network considerations, test updates and auditing for security compliance. You will have to demonstrate the ability to plan and manage a physical hardware and virtualisation strategy by analysing the existing hardware environment and determining which systems meet minimum requirements. This will involve considering tradeoffs of physical against virtual desktop infrastructure environment, network load considerations; disk space; direct connection against brokered connection, determining a virtual hard drive strategy and selecting an appropriate system word size.

For this part you will design an image creation strategy by identifying operating system and enterprise applications that will be included with the standard image as well as appropriate imaging strategies and processes. You will need to consider image localisation within the standard system images. Next you will design a custom image by identifying applications to be installed, identifying features and components to be enabled or disabled and testing the customised image. To meet the needs of the Outcome you must define an image update strategy to include performance optimisation; security considerations, efficiency, offline servicing against online or post-image updates, re-creating or recapturing images.

General information for candidates (cont)

Unit title: Managing a Desktop Operating System Deployment

In part three, you will be asked to design standard system settings by choosing methods including logon and start-up scripts, policy application, designing profiles, designing error reporting and audit policy. You will need to define client security standards such as application control policies, encryption, stopping unnecessary services, designing firewall rules, defining anti-malware settings, changes to logon methods, configuring user rights; defining user permissions policy designing a security template for system lockdown, defining account policies and designing security standards for removable storage. You will be required to define browser settings to facilitate safe Internet use including defining security settings cache location, branding, surfing mode, restricting or allowing plug-ins, add-ons, setting privacy policy and browser protection.

In the fourth section, you will analyse the environment and choose appropriate deployment methods by building the infrastructure to take advantage of minimal user deployment against unattended deployment or a local install. You will look at capacity and scale considerations and determining required changes to the infrastructure. Following on from that, you will design a minimal user involved deployment strategy by considering unicast against multicast, auto-cast against scheduled-cast, staggered deployment, scheduling considerations, network load consequences, selecting a client boot method for deployment, unattended answer files, restricting who can receive images and choosing a delivery mechanism. You have to design an unattended deployment strategy using the same considerations as that used for the minimal user deployment. This is followed by you designing a user migration strategy by determining which user data and settings to preserve, considering local or remote storage considerations, determining a mitigation plan for non-migrated applications as well as securing migrated data and developing a testing method for the designed strategy. Consideration of a wipe-and-load migration against a side-by-side migration is required.

In the final part, you will design a delivery or deployment strategy involving auditing for prerequisites and minimum requirements, choosing a deployment method such as virtualised deployment, remote desktop deployment, a policy deployment, a server-based or client-based deployment, software distribution, scheduling considerations, staggered deployment, network considerations, package creation standards. You will manage application compatibility by testing for incompatibility and choosing a method for resolving the incompatibility such as upgrading or adjusting as identified from auditing incompatible software. You will identify and resolve deployment and client configuration issues such as browser, policy, networking, authentication and authorisation concerns.

This Unit may assist in preparing for vendor certifications like the Microsoft Certified IT Professional Enterprise Desktop Administrator (MCITP: EDA). Please see the separate credit transfer document which gives details of vendor certifications that will be accepted as assessment evidence. Vendor certifications can change rapidly and candidates should be encouraged to check current details at the relevant vendor web site to ensure all the objectives have been met. The Microsoft examination contributes towards the Microsoft Certified IT Professional Enterprise Desktop Administrator (MCITP: EDA).